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LEADING PURSUITS AND LEADING MEN.

A TREATISE

ON THE

PRINCIPAL TRADES AND MANUFACTURES

OF THE

UNITED STATES.

SHOWING THE

PROGRESS, STATE AND PROSPECTS OF BUSINESS:

AND ILLUSTRATED BY

SKETCHES OF DISTINGUISHED MERCANTILE AND MANUFACTURING FIRMS.

EDITED BY
EDWIN T. FREEDLEY,
AUTHOR OF "A PRACTICAL TREATISE ON BUSINESS."

PHILADELPHIA:
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PREFACE.

In submitting the first part of the present Treatise as a fair specimen rather than a complete work, to public consideration, it may be proper to restate the design with which it was undertaken, as set forth in the Prospectus.

The design of this work may be called fourfold; 1. To give concise historical and practical information respecting the leading pursuits of mankind, and afford hints that may aid parents or their sons in the choice of a profession.

2. To bring into general notice new and useful inventions or improvements founded on scientific principles, and approved by practice, as well as to suggest considerations which a lifetime might fail in bringing to individual cognizance.

3. To analyze the unparalleled growth and progress of the industrial arts in the United States, point out wants that Genius and Enterprise may reap a rich reward in supplying, and from the records of the past endeavor to predict the future.

4. To enliven statistical details, and at the same time afford encouragement to merit by sketches of men or firms distinguished for their enterprise or success in their respective pursuits; with an Advertising Department appended, of which the plan has received the approval of some of our most sagacious merchants and manufacturers, and to which, as a

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national advertising medium, great care and attention has been given.

Part II. will follow as rapidly as consistent with careful preparation, and embrace chapters in their alphabetical order, on Glass and its Manufacture; Hardware and Cutlery Trade; Hats and Caps; Insurance and Insurance Companies; Inventions, Modern; India Rubber and its Manufacture; Iron—Iron Founding; Jewelry and its Manufacture; Leather; Machinery and Machinists; Philosophical Instruments; Marble; Musical Instruments; Paper and its Manufacture—Paper Hangings; Safes; The Shoe Trade; The Straw Goods Trade; Warming and Heating Apparatus; Umbrella Manufacture; and perhaps others, with sketches of leading firms in each. It is also proposed at the same time to revise the present edition, correcting errors, and inserting sketches of firms, who both deserve and desire insertion.

The Editor gratefully acknowledges his indebtedness to all who have kindly assisted him, by contributing important facts; and desires especially to express his obligations to David M. Stone, of the Journal of Commerce, New York; Daniel B. Smith, of Germantown; Benjamin Moran, author of "Footpath and Highway," London, and to William D. Nichols, Steel Engraver, Philadelphia.

Philadelphia, 1854.

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LEADING PURSUITS AND LEADING MEN.

CHAPTER I.

AGRICULTURE—AGRICULTURAL IMPLEMENTS, ETC.

Agriculture affords occupation to nearly three-fourths of the inhabitants of the United States, and gives employment to more capital than all the other pursuits combined. In no other department of human industry are statistics of greater importance; and all wise governments have considered it their duty to collect them. From them we learn not only the progress of agriculture, but the advance of the republic in wealth, civilization, and power.

Progress of Agriculture.—In 1821, there were exported from the United States 124,893,405 pounds of cotton. In 1849, the export was 1,026,602,269 pounds. These figures show an increase of more than 800 per cent., in twenty-eight years, in the surplus production of the most important commercial staple of the country and the world. At this time an average crop of cotton may be estimated at 3,000,000 bales, of 400 pounds each; and the prospect is that the demand will equal, if it does not exceed, the supply for many years. Hence, the production of this article is destined to increase much faster than population; for, as civilization and commerce extend, the number that will consume cotton fabrics, and the annual consumption of each person, by reason of his greater productive power, will extend in a still greater ratio; in other words, the same causes that increased the foreign demand for American cotton more than 800 per cent. in twenty-eight years, will augment the amount now exported 300 per cent. in the next quarter of a century.

Fortunately we have the land and climate most desirable for the annual growth of 9,000,000 bales, and we shall probably have the labor and capital needed for the economical production of such crops. At a half bale per acre, only 18,000,000 acres would be planted to realize the crop named; while the four States of Georgia, Alabama, Mississippi, and Texas contain four times that number of acres of choice cotton lands. Without some unforeseen and improbable event, the exportation of cotton will steadily and rapidly increase until its value reaches three hundred million dollars per annum. It is as unlikely that the vascular tissue of flax or hemp will ever supersede the cellular tissue of cotton for the cheap production of desirable clothing, as that loaves of baked clay will serve as a substitute for loaves of bread in feeding the human family. There is an organic difference between the fibres of cotton and flax, in favor of the former, that can no more be changed than iron can be transmuted into gold. Nevertheless, great improvements in the preparation and manufacture of flax are doubtless attainable, as they are certainly desirable.

In the *art* of subduing wild lands, whether forest or prairie, American farmers have no equals. The census of 1840 did not ascertain the number of acres of improved land in the United States; therefore, there are no data showing the increase during the last decade. Corn, being the most important and universal crop grown, is the best test of the progress of the art of tillage in all parts of the Union. In 1840, the returns of this cereal were 377,531,875 bushels; in 1850 they were 595,141,230. These figures indicate a gain of over 50 per cent., while population increased only about 35 per cent. in the same length of time. The crop of wheat would have shown an equal advance, had it not been very badly damaged before the harvest from which the census of 1850 was made. To our knowledge, this staple has been raised in some states, and sold at from twenty-five to fifty cents a bushel, during the last thirty years. Since the discovery of the gold deposits of California, and the partial exhaustion of the best wheat lands in the country, the price of this crop has advanced considerably in all the newly settled districts. In no other nation can wheat and maize be grown at so small an outlay in the labor of man and beast as in the United States. This advantage, which extends to cotton and tobacco culture, and the production of hay, is to be ascribed mainly to the circumstance of the comparative scarcity of labor in this country of cheap farming lands since the first settlement of the British Colonies. A demand for labor beyond the supply has operated as a standing bounty on improved agricultural implements, and extraordinary skill in every manipulation practised in rural affairs; and the natural result is unrivalled attainments in the arts of tillage and husbandry. The same amount of toil of a man and horse which will produce a bushel of wheat in England, will yield ten bushels of corn on good land in this country. Hence it is that our annual crop of maize now exceeds six hundred million bushels. We have often had occasion to admire the tact, skill, and industry with which over three thousand million pounds of seed-cotton are picked by human fingers, in a harvest of a few months' duration. Both cotton and corn are grown in many countries, and where labor is much cheaper than in the United States; but one travels in vain to find a people whose knowledge of the *art* of cotton and corn planting approaches that of the citizens of this republic.—(*Pat. Off. Rep.*)

Here, however, an important inquiry naturally arises in the mind, what is to be the future of American agriculture? Can the soil, with present management, continue to be as fertile as now, and will the prices of produce be as remunerative in proportion to the labor and capital expended? In answer, we can say, it has been incontestably demonstrated, by a comparison of the state census of 1845 and 1850, that in the state of New York, with all its advantages of roads and convenient home-markets, and notwithstanding an increase in improved land of 671,692 acres, the decrease in live stock, and in all the important agricultural products, with the exception of corn, rye, and oats, was prodigious; and it must be self-evident that when the soil loses its fertility, labor and expense must be increased to insure equal production. The great problem in agriculture to be solved, we conceive to be, *how to attain the greatest productiveness of crops with least manual labor, and without impoverishment or deterioration of the soil.* On the solution of this problem depends the great question of cheap bread and the happiness and intelligence of succeeding generations. If productiveness of crops can only be secured by unremitted and severe manual labor, we must despair of a general spread of intelligence; and, if the natural resources of the soil be not renewed, our posterity must be heirs to a barren and desoalted land. Farming, then, can be said to approximate perfection only when great productiveness is secured without severe manual labor, and without detriment to the soil; and, therefore, passing over all elementary details of agriculture, we will confine our remarks, in this article, to a consideration of those means by which alone this result can be attained, viz., by means of *labor-saving machines* and *soil fertilizers.*

I.—IMPROVED AGRICULTURAL LABOR-SAVING IMPLEMENTS.

In the purchase of agricultural implements, it is especially desirable that farmers do not incur more expense than what is absolutely necessary for the right management of the farm; but in no other thing will the oft-repeated assertion that the "best is the cheapest," be found more true. Farmers, however, are not the only persons interested in this matter, but country merchants,* who desire the prosperity of their neighborhoods, and in fact, all merchants should give it especial attention. For the benefit of all we shall treat it with a view to the two practical considerations of *what agricultural implements to buy*, and *where they can be bought.*

1. Ploughs.—The first want in farming is a machine to break up the soil, and consequently the plough stands at the head of its fellows in the ranks of the machinery of the farm. It is a labor-saving improvement on the spade, producing substantially the same effects, but requiring very simple muscular action. It is an implement distinguished both for the antiquity of its name, and for the various successive improvements made in the mode of its construction. It is mentioned in the writings of Moses, and figures on the monuments of Egypt; but it has also grown from the "mere wedge with a short beam and crooked handle," worked by hand, to the complicated machine, propelled by steam, of Calloway and Purkis. Without, however, tracing the steps of its progress, we shall proceed to describe the essential parts of a plough—the principal varieties—and the prominent features of the best now in use for ordinary tillage.

The different essential parts of a plough have certain names usually given to them. The *body* of a plough is that part to which all other parts are attached. The bottom of it is called the *sole* or *slade*, to the forepart of which is affixed the *point* or *share;* the hind part of the sole is called the *heel.* The *beam* which advances forward from the body, serves to keep the plough in its proper direction, and to this end of it are attached the oxen or horses which are employed to draw it. Fixed in the beam, in a vertical position before the point of the share, with its point a little forward, is the *coulter*, which serves to cut a vertical section in the ground; while the point of the share expanding into a *fin* separates a slice by a horizontal cut from the subsoil or solid ground under it. The *mould-board* is placed obliquely behind the fin to the right or left, in order to push aside and turn over the slice of earth which the coulter and share have cut off; it thus leaves a regular furrow wherever the plough has passed, which furrow is intended to be filled up by the slice cut off from the land by the side of it when the plough returns. The *handles* direct the plough by keeping it in the line required, and at a regular depth in the ground. By means of the *dial-clevis* and *draught-rod* the plough can be made to work at any required distance on either side of the team, and the depth of the furrow can be conveniently gauged.

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* The country merchant "should never visit the city to replenish his stock, without endeavoring to bring back something that will afford valuable suggestions to his neighbors and customers. If these are, in good part, farmers, and no store in the vicinity is devoted especially to this department, he should be careful to keep a supply of the best ploughs and other implements of farming, as well as the choicest seeds, cuttings, &c., and of those fertilizing substances best adapted to the soil of his township, or most advantageously transported thither; and these he should be very willing to sell at cost, especially to the poor or penurious, in order to encourage their general acceptance and use. Though he make no profit on these, he is indirectly but substantially *benefited by whatsoever shall increase the annual production of his township, and thus the ability of his customers to purchase and consume his goods.* The merchant whose customers and neighbors are enabled to turn off three, five, seven, or nine hundred dollars' worth of produce per annum from farms which formerly yielded but one or two hundred dollars' worth beyond the direct consumption of their occupants, is in the true and safe road to competence and wealth, if he knows how to manage his business."—*Freedley's Practical Treatise on Business*, page 161.

All the varieties of ordinary tillage ploughs may be divided into two classes: *swing-ploughs* and *wheel-ploughs;* the former distinguished by the balancing of their depth and action from a point adjusted to the line of draught, and the latter by having wheels for regulating the depth and steadying the action. Four peculiar advantages are ascribed to the *swing plough:* that it has a simple construction and is less expensive than a wheel-plough; that it can be easily and simply set to a greater or less depth of furrow, either by altering the draught-iron at the point of draught, or by altering the length of the draught-traces; that the ploughman also can, in some degree, modify its depth of action by lifting or depressing the handles; and that, whenever ploughing of any kind is at all practicable, he can work with it in any weather and almost upon any soil; and five peculiar advantages are ascribed to a *wheel-plough:* that it can be worked more easily than a swing-plough; that it does its work with more uniformity and exactness as to both depth and width; that it can perform shallower work than a swing-plough can perform; that it can easily work some kinds of ground which are very difficult to be worked with the swing-plough; and that with any given form of body it can work in some circumstances which would be utterly impracticable to a swing-plough with the same form of body. From a comparison of advantages the following general conclusions have been arrived at: When you have good ploughmen the swing-plough is best, but when you have not, the wheel-plough is preferable.

Farmers will find great advantage in purchasing ploughs, of which all the parts, both wood and iron, have been made from the same moulds, so that when any part gives out it can be easily replaced; and those which can be applied to the greatest variety of uses, or are susceptible of attachments, as may be desired, will be found the cheapest. The Pennsylvania improved ploughs have been pronounced superior to all others and more easily handled, the points and shares being of *wrought* steel or iron.

Among the varieties of ploughs designed for special purposes, the two most important for general use are the *hill-side* plough and *subsoil* plough.

The peculiarity of the construction of hill-side ploughs consists in the fact that the mould-board can be instantly changed from one side to the other, which enables the operator to perform the work horizontally upon hill-sides, going back and forth on the same side, and turning the furrow slices with great accuracy downwards. They are employed and, by many, are much approved for level ploughing, as this leaves the field without any centre-dead, or finishing furrow; nor does it make banks or ridges by turning two furrows towards each other. When thus used they save much labor by allowing the team to turn short about at the end of the furrows instead of obliging it to travel across the wide ends of each land in the field. They are useful for ploughing down the banks of ditches, as they carefully turn the furrows from the ditch by carrying the earth upon the level ground."

Governor Randolph, the son-in-law of Thomas Jefferson, has the credit of being the inventor of the hill-side plough. Among recent improvements is one by which the beam and handles of a hill-side plough together turn round upon a pivot formed of the top of the standard, so that it can be operated with but little exercise of strength. It is called the *revolving beam plough*, and is manufactured in Pittsburg. This will be found a very desirable improvement.

Subsoil Ploughs are intended to stir up the subsoil; or, in other words, produce similar effects upon it that ordinary tillage ploughs produce on the soil. Subsoil ploughing differs from deep ploughing and trench ploughing in its stirring the subsoil and not mixing any of it with the soil, while they bring more or less of it to the surface. In stiff and adhesive soils, this operation is especially valuable; but care must be taken that the earth below be sufficiently porous to allow the moisture to escape, or its beneficial effect will not be felt until after the land has been drained. The plough is one of peculiar construction, and is used by following directly after the team which turns up the soil, and in the same furrow. Ruggles, Nourse, Mason and Co., claim the importation from Scotland of the first subsoil plough in 1840; but they were made in Baltimore by Eastman many years ago.

Those invented and manufactured by Parker, White and Gannett, Boston, and C. B. Rogers, Philadelphia, have a deserved reputation. The price ranges from five to fifteen dollars.

Recently a double mould-board trench-plough, known as the *Michigan double Plough,* has attracted considerable attention. It has two mould-boards on one beam. The forward or small one pares off the surface or sod and turns it into the previous furrow, usually to a depth of three to five inches. The larger one follows closely, lifting the under soil upon the top, and in sward land completely burying the sod with the mellow earth from below. The sizes afford a range of work from seven to fifteen inches deep.

2. Harrows.—After the soil has been turned over by the plough, an implement is required to pulverize it, and disengage from it the roots and lower stems of weeds, and thoroughly intermix its component parts. This service is usually derived from the *harrow*, an implement nearly or quite as ancient as the plough, but which has not undergone as many improvements, and which may yet be regarded as not only very simple, but essentially imperfect.

The most recent, and probably the best improvement in the harrow, is that invented by G. M. and W. B. Ramsay, of New York. This invention differs from all others in having three distinct parts, each acting independently of the others, yet all united by peculiar joints in such a manner as to form a most effective implement. Its advantages over the Scotch and common double harrow are said to consist in the fact that it is more flexible and less liable to choke than the former, and no part of it can sway out of the line of draught as can the latter. It is peculiarly adapted for rough or stony soils, for if the first or central portion is lifted by a rock the two wings are not disturbed, and the same may be said of either wing. The draught of this harrow is no greater than those in ordinary use, nor is the expense of construction any more.

3. Seed-Sowers.—When the ground has been prepared by the plough and the harrow, the next implement we will want is a *seed-sower.* The one which has been found to answer best on small farms, and for small seeds, is the *drill-barrow*, trundled along like a wheelbarrow. When the surface is mellow, it will open the furrows for the reception of the seed which it drops, covers, and then rolls the earth firmly over it. Larger ones, however, are constructed, having fixtures for drilling peas, beans, corn, &c., which may be drawn by a horse. They will plant ten acres per day with entire uniformity as to quantity

of seed, depth of covering, and distance. We are not aware that there is any machine for *broadcast sowing* in use in this country; but in Scotland and the best agricultural parts of Britain they have a broadcast sowing machine, which may be drawn by one or two horses, and will sow a breadth of eighteen feet, but is capable of being contracted to fifteen feet or less, if required, and can be regulated to sow from two to five bushels to the acre. It is mounted on three wheels, the front wheel being on a swivel-bar, and one or both of those behind serves to turn the distributing machinery. The principle of the distribution consists in a line of small thin-toothed wheels, revolving within the seed-chest, each wheel being immediately over a distributing orifice, and through these orifices the seeds are discharged by the revolution of the wheels, which are immersed in the grain. An additional apparatus is prepared expressly for sowing down with grass-seeds. A roller follows immediately after the seed, and the roller is followed by a harrow.

4. The CULTIVATOR is a labor-saving implement that will be found exceedingly useful for stirring the earth between the rows of corn and other crops. The teeth are usually of cast-iron, and when properly made and chill-hardened they are undoubtedly the best. There are various forms of teeth, all made to fit the same form of mortice, and by purchasing them the farmer can use them in the same framework as he may require. By an expanding attachment, these instruments are capable of being adapted to any width of row.

Among recent inventions is one which has been called by the manufacturers a *Horse Hoe.* It is designed for the hoeing or cultivation of corn, the various root crops, cotton, hops, young nurseries, and the hoed crops generally; is quite light, easily managed and of easy draught for one horse or mule; a thorough pulverizer of the surface-soil, and exterminator of weeds and grass. "The forward tooth is simply a coulter, to keep the implement steady and in a straightforward direction; the two-side, or middle teeth, are miniature ploughs, which may be changed from one side to the other, so as to turn the earth from the rows at first weeding when the plants are small and tender, or towards them in later cultivation, at the option of the operator; the broad rear *tooth* effectually disposes of grasses and weeds, cutting off or rooting up all that come in its way—is a thorough pulverizer of the surface, sifting the earth and weeds through its iron prongs or fingers in the rear, leaving the weeds on the surface to wilt and die and the ground level and mellow."

Before leaving the subject of improved implements for pulverizing the soil, we take pleasure in announcing the erection of a new establishment on Pennypack Creek, near Philadelphia, for the manufacture of *shovels and spades,* owned and conducted by Prince, Harper & Co., 31 Commerce street. The articles of their manufacture are all hammered by tilt-hammers, instead of being rolled as is ordinarily done, and therefore may be relied upon for greater toughness, solidity and durability, while at the same time they are distinguished by a superior finish. We feel assured that the brand Prince, Harper & Co. is a guarantee of excellence, and that it will soon become as much of a favorite in the market as that of Ames has been heretofore.

Now, trusting to a beneficent Providence to reward our labor with bountiful returns, we will procure and make ready our

5. Haying and Harvesting Implements.—The most ancient of which we have any knowledge is the *sickle* or *reaping-hook.* This was succeeded by the *scythe* and the *cradle,* which continue to be the principal instruments in use for the cutting of hay or grain in Europe and America. Both of them, however, demand great muscular action, and the humane genius of the world has been exercised for more than a century in trying to supersede them by improved machinery ; but all the attempts, until recently, have failed, more, it may be stated, from a disinclination of the public to encourage them than from want of merit. Recently, however, the success of *M'Cormick's Reaper and Mower* in England, has not only established machines of this class in the same rank among agricultural labor-saving devices that the spinning-jenny and power loom occupy in manufactures, but has given such an impetus to this branch of manufacture, that amidst rival and conflicting claimants it is difficult to decide upon their relative merit. The principle of the cutting apparatus in most of them is extremely simple, consisting of a serrated saw vibrating rapidly right and left, and working in combination with fingers which hold the grain up to the knife. The teeth incline alternately in each direction, so that at each vibration half of them are inclined in the direction of the motion. There are now probably fifteen different manufacturers and patentees of reaping and mowing machines, all of them, I believe, using Hussey's Vibrating Knives, the patent for them having expired. By means of one of these machines two men with two horses can reap or mow fifteen acres in ten hours. The price for a reaper and mower combined, is about $150. Of mowing machines *Ketchum's* has received the preference in the New England States, while *Allen's,* Salem, N. J., is held in high esteem in the Middle States.

The Revolving Hay-rake is a harvesting implement by which a man and boy, with a horse, will rake from fifteen to twenty-five acres per day, but it is too well known to need a description. One of more recent introduction is "Delano's Independent Tooth Rake." It is mounted on wheels and each tooth acts independently, so in case of obstruction only one may be injured. It deposits the hay in loose winrows, thus admitting the circulation of air, and does not beat off the leaves. As a *gleaner* it is invaluable, may be used in dry as well as damp stubble, and collects the straw with entire freedom from dust. In short, it is unquestionably destined to be very generally adopted, and we subserve the interests of farmers by calling their attention to it. Mr. Landreth has it for sale in Philadelphia, at Nos. 21 and 23 south Sixth street, and at his warehouses in Charleston and St. Louis.

To reap or *cut corn*, a very simple, cheap, and apparently effective machine has been invented. "A horse, harnessed in a pair of thills attached to a pair of wheels, walks between two rows, while the wheels run outside of the same. Upon the axle there is a knife for each row, that cuts by drawing the machine forward, the stalks falling back, and are held till enough accumulates for a bundle, when by touching a spring they are dropped in a pile ready for the wagon, or for setting up to cure in shocks. The corn is brought up to the knives by a reel." Another machine has been recently invented to *husk* corn. "A man stands by the side of a little frame and turns a crank, while a boy places the ears of corn in little troughs of a horizontal wheel, on top of the frame. As they pass round a chisel comes down, separates the stalk from the cob, and pushes out the ear, and returns, ready for another as it comes round. Another contrivance throws out the husk. In this way, says the inventor, two hundred bushels a day can be shelled, or, with a large power machine, twelve hundred bushels in ten hours." Price, from $18 to $25.

For *unloading* hay a labor and time saving contrivance has been made, called a *hay-drag*, consisting of a rope passing over and under fixed pulleys, to one end of which is attached a fork with a head about twenty-eight inches long and steel prongs twenty inches long. After the fork has been thrust into the hay, it is lifted by the strength of a horse attached to the other end of the rope and working just without the barn door. It is kept level by means of a guide until the fork is high enough to unload, when the rope is slackened and the hay deposited. The man in the mow can give any direction to the hay he pleases while it remains suspended. The horse is backed and the operation repeated. The arrangement is cheap, and by means of it six tons have been pitched twenty feet high in an hour.

7. Machines for Threshing.—Of these the only one universally known and now in general use is the flail. Within the present century, however, a portable machine, propelled by horse-power and known as the *Threshing Machine,* has met with very considerable favor. The most highly improved of these machines gives speed to the drum by three motions or pairs of wheels instead of two only, as was formerly the case; and it is fitted with an iron horse-wheel turned on the upper and under surfaces of the rim in a lathe to admit of toothed segments of eight parts securely bolted to the rim with a seating of wood between, rendering the wheel perfectly true, and gearing properly with the pinion-wheel that it drives, instead of having cogs cast on the rim as heretofore; so that when the teeth are worn or accidentally broken, one or any number of parts may be replaced by the attendant of the machine without a mechanic; it is also turned on the upper surface of the rim, to afford a true bearing for the friction wheel. The drum or threshing cylinder is made entirely of iron, with five beaters peculiarly formed of wrought-iron, extremely light and strong, occupying less than the space of four wood-beaters, and thus giving one-fifth more threshing power without increased speed or friction. A *separator* is attached to the thresher, which saves much labor in winnowing the grain, besides leaving it free from straw; and, in fact, the more recent improvements have an apparatus attached for cleaning the grain and putting it into bags ready measured for market, all at one operation. The price of one of these machines varies from thirty-five to one hundred and fifty dollars, according to size and finish; and by the use of two horses one will thresh at the rate of 150 bushels of wheat or 300 bushels of oats per day. The only valid objection made to the use of threshing machines is that they frequently break the grains of wheat, and hence it would be better to continue to thresh *seed-wheat* by means of the flail. Water-power is the most desirable motive for operating threshing machines, and next to water-power, steam; either securing greater uniformity of action than horse-power.

Of corn-shellers there are various patterns, some to be operated by hand-power and others by horse-power. The former are extremely simple, cheap, and efficient implements, and should be found on every farm in the United States. They will shell from 100 to 150 bushels of corn per day; but Reading's Power Corn-Sheller and Separator, when operated by a one-horse tread-power will shell from fifty to seventy-five bushels per hour and separate it from the cob, or with a two-horse tread-power it will shell 150 bushels in an hour.

There are many other labor-saving machines not, perhaps, so absolutely essential to successful farm management as those abovementioned, but which, nevertheless, should receive due attention and examination by every intelligent farmer. Improved Fanning Mills, Vegetable Cutters, Steaming Apparatus, Clover Seed Harvesters, Potato Diggers, Farm-house Pumps, Sausage Cutters and Stuffers, Pratt's Ditch Digger, Arnett's Improved Road Scraper, Gibb's Rotary Spade, which "foreshadows a rotary steam-working implement for doing the work of the plough," are all inventions or improvements of reputed excellence and worthy of extended notice, but we will pass them by to notice a machine for propelling the other machines, which, if brought into extensive use in agricultural operations, will cause a revolution in the social and intellectual condition of mankind, to which all its past triumphs will be as nothing. We refer, of course, to the STEAM-ENGINE.

Steam engines designed for agricultural purposes are of two kinds, fixed and portable.

A fixed engine, whenever its power can be made fully available for the use of the farm, is more profitable than a portable one, besides being cheaper at first and more easily kept clean; for a number of machines, if conveniently arranged, can be driven by the same power, and an apparatus for steaming and cooking can at the same time receive its full supply of steam from the boiler; yet a portable engine will probably be found the most convenient, and of greatest practical value. They are very simple in their construction, free from complicated movements, are easily managed, and not liable to get out of order. They are fitted with superior metallic pistons, thus obviating the risk and trouble of packing, and with metal side valves in lieu of steam taps; and they are more durable and efficient than engines with vibrating or oscillating cylinders. The price of a four-horse power portable engine is about $600, a three-horse power $500, and a two-horse power, which is equal to the performance of more work than is required to be done on farms of moderate extent, would cost about $400. In England, the steam-engine is in use for driving threshing-machines, corn shellers, cob-crushers, turnip-cutters, &c., and recently a patent has been taken out for applying it to the plough, to which can be attached a harrow, drill, and seed box when requisite, in order to perform the entire operation at one going when it is for the last ploughing without trampling on the soil. It is also proposed that the same engine shall draw the manure carts to the field and carry the produce to market.

Having thus thrown out some suggestions as to the means of securing productiveness of crops without severe manual labor, we proceed to the second division of our subject: How to preserve or improve the fertility of soils? This is an inquiry certainly no less important than the other; for all improvements made in tillage, farm implements, means of transportation, &c., will only hasten a general sterility of the soil, if means cannot be taken to restore the elements of its fertility. Fortunately, however, science has come to the aid of common sense and experience, and by showing what constituents plants require during their growth and development, has also shown what fertilizers are best adapted to their wants.

II. FERTILIZERS.

In our remarks on fertilizers we do not intend to encroach on the province of agricultural chemistry in regard to the proper mode of their application, or as to the grand point of selecting and proportioning manures to the highest practical advantage. We would gladly hasten that good time when farmers will keep an "exact debtor and creditor account of every field, showing precisely what every crop takes out of it, and what every manuring puts into it; and will see by a glance at that account how much food any field has in its larder, and what additional principles and amount of food it will require in the form of manuring, in order to its rendering a proposed course of crops upon it vigorous and luxuriant;" but we must content ourselves with a few plain, practical suggestions, in respect to the best and principal fertilizers which science has yet discovered and experience appoved.

1. Lime is one of the best mineral fertilizers we have, yet it has not in all cases given satisfaction. The cause of disappointment in the use of it we suspect lies mainly in the fact of supposing it, or any one thing, sufficient to secure uniformly good crops. Plants require several constituents to promote their development, lime being only one of them, and if the others be absent from the soil they cannot flourish.

Lime, in its original state of carbonate, is quite insoluble; but heat expels the carbonic acid gas, and the result is quicklime, which may be readily crumbled into a powder by being slaked. If immediate effects are desired from the application of lime, it should be applied in a complete state of solution, and care should be taken to avoid much exposure of it to the atmosphere, which restores it to its original state of a carbonate. This effect of the atmosphere renders it necessary to renew the application of lime at the commencement of each four or five years' rotation of crops. "When it is intended to apply lime to ploughed ground," says Gouverneur Emerson, editor of the *Farmer and Planters'*

Encyclopedia, "it should not be brought into the field until the ploughing is entirely or nearly completed, and near the time of sowing the crop. It must be kept in compact heaps, so as to expose the least possible surface. In slaking lime for the field, or, indeed, for any other purpose, care should be taken not to throw on too much water at first, as this interferes with the process, and causes lumps to remain which never crumble completely into powder. When spread, it should be immediately followed with the plough or harrow, by which more or less of it will be covered and partially protected from the atmosphere whilst attending the coming of dissolving rains. Where it has been deposited in a quick state upon headrows or ridges, the heaps may be slaked about a week before the time of spreading. The mode of slaking with water is always to be preferred. When left to the weather, the process is very uncertain, depending mostly upon the precarious supplies of rain and dew, and involving always a considerable depreciation through carbonization.

"To those who wish to make a little lime go as far as possible, or to secure its application at all times in the most soluble state, I would recommend its solution in a large quantity of water, so as to form what is commonly called milk of lime, and have this sprinkled over ploughed ground by means of a watering-cart, such as is commonly used in Belgium, and some other parts of Europe, for the distribution of liquid manures, and in our cities for watering the streets. In places situated at some distance from the sea, where soda is deficient in the soil, salt water may be advantageously employed in making the solution. Ten bushels of freshly slaked lime used in this way will, I have no doubt, prove as efficient an application to an acre as fifty or one hundred bushels scattered over the surface of the earth, and left long exposed to the open air without rain. It is the prompt solution and ready diffusion of lime through the soil which secures its efficacy. Hence we find much smaller dressings answer on light porous sandy soils than will suffice for compact clay soils, the last being so difficult to penetrate.

"Lime in its quick or soluble state should never be allowed to come into close contact with animal manures of any kind. Independent of the positive demonstrations which science may furnish of the truth of this precaution, there is a simple observation made about lime-kilns which affords the most incontestable evidence of the fact, namely, that droppings from the numerous horses generally employed in hauling, after becoming sprinkled with quick-lime, are found to be almost valueless as manure. I presume that lime injures animal manures chiefly by rendering their extractive matters insoluble, and dislodging ammonia where this has had time to form."

2. FARM-YARD MANURES are the fertilizers in most general use in the United States. Their value depends mainly on the amount of ammonia they contain. This is a highly volatile salt, which it is exceedingly important to prevent from escaping. The most "effectual method of fixing the ammonia, and preventing its escape from stables, farm-yards, sinks, and places where animal manures are accumulated, is to sprinkle them from time to time with diluted sulphuric acid, in the proportion of one pint of acid to eight gallons of cold water. The vitriol must not, of course, be put into a metallic vessel. A common broom-corn brush or whisk may be conveniently employed to make the sprinklings, the frequency of which must be regulated by the pungency of the fumes coming from the manure heaps which indicates the escape of ammonia. As sulphuric acid costs by the carboy only from two to two and and a half cents per pound, the small expense incurred may be readily conceived. Those who make use of vitriol must guard against the danger of getting it upon their persons or clothing."

3. The efficacy of GYPSUM OR PLASTER OF PARIS as a fertilizer is the subject of great diversity of opinion among farmers. Along the sea-coasts it has been found useless; the muriatic acid derived from the salt water converts the plaster into an insoluble substance called muriate of lime; but in other sections it is highly prized. Its value consists in the fact that it will seize upon and change the ammonia, which exists in all rain-water, "into a sulphate of ammonia, which, not being volatile, remains in the soil to be dissolved and absorbed by the spongelets of the roots of plants."

4. PHOSPHATE OF LIME is acknowledged by both scientific and practical men to be a fertilizer of supreme efficacy in all soils not deficient in ammonia. It enters into the composition of all plants and animals, and is found in all soils not absolutely sterile. No plant will grow without phosphoric acid, which, united with lime, is phosphate of lime. It is generally derived from the bones of animals, and hence is commonly called bone-earth. In England, where premiums have been awarded for crops "of 88 bushels of wheat, 80 bushels of barley, and 108 bushels of oats, per acre," thousands of tons of bones are imported, and ground or crushed into this most valuable fertilizer. In this country, a mine of almost pure phosphate of lime has been discovered at Crown Point,

Essex county, New York, but Prof. Mapes says these deposits have not yielded the promised or expected results.

5. But among the most important and cheering evidences of agricultural progress in the present age may be mentioned the attention now paid to concentrated fertilizers; such as GUANO, POUDRETTE, NITRATE OF SODA, POTASH, GROUND BONES, and the SUPERPHOSPHATE and AMMONIATED SUPERPHOSPHATE OF LIME prepared from these.

GUANO, it is well known, is an excrement of certain birds. It was first discovered on the island of Ichaboe, on the western coast of Africa, some twelve years ago, by the English, who, finding it a fertilizer of remarkable properties, so rapidly exported it, that the supply was soon exhausted. Large fortunes were, however, accumulated during the excitement. Guano now is obtained principally from the Chincha islands of Peru, where it is owned by the government, who have agents in the United States, and sell it at a fixed price. It is to be regretted that they have set the price so high as to preclude its general use.

POUDRETTE is an economical and valuable fertilizer. Its economy consists in its portability, in its ease of application, and in the small bulk required to produce the same effect as a much greater bulk of other manures. It is said that a gill of poudrette applied to a hill of corn, will cause a more rapid growth than a shovel full of barn-yard manure, and consequently a bushel of the former is about equal to twenty bushels of the latter. Among those who have given this article especial attention, we refer with pleasure to the house of PARKER, WHITE & GANNETT, Blackstone street, Boston, who by the way are reported to have the most complete stock of fertilizers in the country. They are the sole agents of the Lodi Manufacturing Company, whose poudrette has received flattering testimonials and encomiums from the highest authorities. Unless very recently manufactured, this poudrette is free from any odor whatever, but its pungency may be tested by mixing a pint of it with a half pint of finely pulverized unslaked lime, and after slightly moistening the mixture, putting the whole into a quart bottle and corking it tight for half an hour. It has been applied with excellent effect to corn and potatoes, and as a garden manure it is probably the best and cheapest that can be had.

Without devoting more space to the peculiar excellencies of each of the concentrated fertilizers before enumerated, we may say of all of them that they have the advantage of rendering the fertilizing elements far more soluble and accessible to growing plants, thereby producing speedy effects; they can be kept on hand ready for application, and their essential properties being fixed by chemical processes, and not allowed to escape, the effect is certain and durable; in a word they secure a prompt return for the outlay. The fertilizer employed by Dr. Emerson is a finely grained superphosphate of lime, charged with ammonia by a beautiful chemical process, through which the ammonia becomes fixed, and no longer capable of flying off, as is the case with this volatile salt as it exists in guano. "In applying three hundred pounds of this chemical fertilizer to the acre," he says, I prefer scattering at first one-half upon the ploughed ground previous to harrowing, and afterwards drilling in the remaining hundred and fifty pounds along with the seed, at one operation of the drill. By thus securing the proximity of the seed and its fertilizer, I expect to gain great advantages, probably equal to almost double the effects of the same quantity sown broadcast. The fertilizer I have named does not, like guano, injure the germ or sprout, unless when applied in undue quantities."

"The cheapest concentrated manure," says Mr. Landreth, whose experience entitles his opinion to great weight, "is guano—the Peruvian—mixed with pulverized charcoal, or with gypsum, if charcoal cannot be had, *and placed beneath the surface.*"

Before closing this article, it is proper to devote a page to a special department of agriculture, of relatively inferior magnitude, yet of great intrinsic importance, viz., Garden Seed Culture.

In casting the eye around for data on which to predicate remarks respecting this pursuit, we are struck with the prominence of one name—that of Mr. Landreth, of Philadelphia—so intimately interwoven with the history of the progress and present extent of the seed trade of this country, that we believe we cannot better illustrate the subject than by extracting from the Dictionary of Modern Gardening, the Transactions of the Farmer's Club, from those of the Pennsylvania Horticultural Society, and other sources, a brief sketch of his history and operations.

Prior to the revolution, the rearing of garden seeds, as a profession, was unknown in this country. The wants of our people were few and simple; each rural family endeavored to supply its own demands, and as opportunity presented minister to the necessities of others. Such was the condition in the more populous portions of the provinces, while in others more remote and less carefully cultivated, nothing but the most ordinary varieties of culinary vegetables were to be observed, and they of an inferior quality.

In 1784, the year immediately succeeding our revolutionary struggle,

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David Landreth, who had previously emigrated from the north of England, settled in Philadelphia, and shortly thereafter established himself as a "nursery and seedsman," the profession to which his early education had been directed at home, under the best instructors of that day. On a portion of the city plot, now a densely built quarter of the city, Mr. Landreth located his nursery grounds, and soon established a store for the sale of seeds, the first of its kind in Pennsylvania, and it is believed the very first of that character in America. To many, no doubt, such a store was matter of surprise, and we may wonder that encouragement grew fast enough to sustain the novel enterprise; yet the result proved the soundness of the founder's judgment. The grounds at "centre square" soon became too confined, and larger space beyond the bounds of the city was required and obtained, which in time needed large additions to supply the demands from every quarter that crowded upon this persevering horticulturist. He lived to a patriarchal age, surrounded by his descendants, enjoying the shade of trees planted by his own hands, his name a household word in every rural home throughout a continent.

In contrast with the early efforts above described, the extent of the establishment as conducted by the son and grandson of our pioneer in horticulture, and the extent of the American seed-trade at the present time, reaching, as it does, not only to every quarter of our wide spread population, but wherever American commerce has made its way, may well excite astonishment.

On looking over the documents from which these remarks are compiled, we learn a fact, known, we think, to but few, even though familiar with the currents of trade as directed by American enterprise, that large shipments of Landreth's seeds are annually made to the English Asiatic possessions; one recent invoice alone having amounted to four tons weight. Indeed his seeds prepared for family use seem to be as popularly known and esteemed, on the shores of the Ganges, and the Bay of Bengal, as on those of the Mississippi and Ohio.

Our space will not permit as much detail as this interesting subject demands, and we are compelled to close by extracting, from the Transactions of the Farmers' Club, a description of Bloomsdale, the seed ground of Mr. Landreth.

Bloomsdale Farm lies on the Pennsylvania shore of the Delaware, about two miles above Bristol in Bucks county; it contains near four hundred acres of choice land; is bounded on the east by the river Delaware, on the west by the Delaware division of the Pennsylvania Canal, and is intersected from north to south by the Philadelphia and

Trenton Railroad, nearly through the centre. The mansion stands on a slight eminence, about one-sixth of a mile from the river, in an enclosure of about one hundred and twenty acres. It overlooks a very extensive lawn, tastefully adorned by the choicest trees, shrubs, and flowers, and has a good prospect of the New Jersey shore, and a magnificent view of the Delaware as far as Penn's Manor, formerly the official residence of the illustrious proprietor of Pennsylvania.

At a proper distance from the mansion, in the back grounds, is one of the most spacious, costly, and commodious barns in the country, with very extensive sheds, styes, &c., adjoining. At a short distance, in another direction from the mansion, is a row of tasteful little cottages for the laborers of the farm, all of whom board themselves. Near these, Mr. L. has recently erected a large two-story fire-proof stone house for packing and storing the seeds. These buildings, with the carriage-house, the implement-house, and drying-houses for curing seeds, altogether constitute a rural village.

The surface of this farm is only surpassed in beauty by that of the prairies: it is as level as is desirable, the soil being a friable sandy loam, from five to eight inches in depth, overlying a loam subsoil, and entirely free from stones. It is more free from weeds than most of the small vegetable gardens of the country, notwithstanding the character and extent of the various crops here produced, no more land being kept in grass than is necessary for the stock.

Last year the quantity of lands for various crops, ploughed during the season, was about three hundred acres; this year it will considerably exceed that quantity. Within the present year Mr. L. has found it expedient to increase his facilities for rearing seeds, by the purchase of an adjoining farm; which, united with his other ground, gives an unbroken plain of three hundred and seventy acres; a seed farm larger than any in Europe of which we have record, and many times greater than any similar plantation within the United States. Perhaps we may more fully express the extent of this establishment, by stating the fact that each acre cultivated receives on an average tenfold the labor usually bestowed on agricultural crops.

The perfect order and neatness that pervade this extensive estate would be worthy of the imitation of small farmers everywhere—and it would amply reward them for the expense of a trip from the remotest part of the country to visit it, and see for themselves.

Lastly, the *city branch* of this elaborate establishment, where the produce of Bloomsdale, united with the necessary machinery for the tillage of the soil and harvesting of crops, is kept for sale, fills nine floors of a spacious building erected specially for the purpose. Mr.

Landreth has also warehouses at Charleston, S. C., (established in 1819,) and one at St. Louis, Mo., (for which George Burnet, Jr., No. 6 City Buildings, is agent,) both fully stocked with similar goods.

Hovey & Co., of Boston, are one of the oldest and most respectable of the Agricultural and Horticultural establishments in the country, having been founded in 1834. The firm consists of two brothers, one of whom, Mr. C. M. Hovey, is widely known as the editor of the Magazine of Horticulture, now in its twentieth volume, and author of the Fruits of America, one of the most magnificent works on fruits ever published.

The reputation of their seeds extends throughout the country, and to California. They have, also, in connexion with their seed store, at 7 Merchants' Row, Boston, very extensive nurseries in Cambridge, three miles from the city, where they cultivate an immense stock of trees, particularly pears; they having undoubtedly the greatest collection of pyramidal pear trees in the world, it numbering about three thousand, nearly all of which are in full bearing, and embracing every new and popular kind.

They have, also, six very large green houses and conservatories, containing probably the best collection of camellias in the United States. Ornamental trees and shrubs, evergreens and plants, of every description, fill their grounds.

The Messrs. Hovey originated the celebrated Hovey's Seedling Strawberry and the Boston Pine, the two best varieties known; they also raised the Hovey Cherry, a superb fruit. They have been the most energetic of any of our nurserymen in introducing to the public new fruits, flowers and plants.

In pursuance of our plan, we must also advert, before closing this article, to one or two of the leading houses who sell the improved implements we have described, for it is as important to know where to buy as what to buy.

Among the leading agricultural warehouses in the New England states—though not the oldest—to which we have had our attention called, is that of Parker, White and Gannett, Boston, whose careful attention to the wants and orders of their customers, and just and liberal mode of dealing, have given them a reputation not confined within New England. The house was established in January 1847, by James M. Parker and George E. White, the former having a practical knowledge of manufacturing ploughs and implements, the latter an experienced seedsman and nurseryman. They gradually increased their business until the sales rooms of their present house occupy four large stores on the corner of Blackstone and North streets, filled with the most approved implements, seeds, fertilizers, &c., to be found in the country.

One of the partners of this house, we learn, has recently visited England and the continent of Europe, for the purpose of making arrangements to be constantly supplied with the new varieties of fruit and ornamental trees for their nursery, and of the best seeds of foreign growth for their seed store.

A special department of their business, not usually found in agricultural warehouses, is the furnishing of handles for axes, hoes, shovels, and other tools, from the best walnut, white oak, and ash timber.

In Philadelphia, so long dependent on other quarters for the implements with which Pennsylvania farmers till their soil, we are gratified in announcing that Mr. David Landreth, whom we have elsewhere noticed in reference to the garden seed culture and trade, has embarked in the construction of agricultural implements and machinery. He has recently erected at Bristol, Pennsylvania, steam works for this purpose in connection with his extensive warehouses in Philadelphia, Charleston, S. C., and St. Louis, and we hail him as a worthy and useful competitor in this department of manufactures.

C. B. Rogers, 29 Market street, Philadelphia, has also a large assortment of farm implements, seeds, &c.

In Baltimore the leading houses are E. WHITMAN & Co., 63 Exchange Place, and R. SINCLAIR JR., & Co., 58 Light street, to whom orders can be forwarded with confidence.

In St. Louis, WM. M. PLANT & Co., Main street, between Market and Chestnut, and GEORGE BURNET, Jr., 6 City Buildings, are the principal establishments.

CHAPTER II.

BOOKS AND THE BOOK TRADE.

"A SOUND mind in a sound body" is the classic description of a perfect man. In the preceding chapter we considered improvements that we believed would afford increased sustenance for the body—the present we will devote to "food for the mind." Taste and judgment in literature being no longer confined to mere professional critics, but characterizing at least one-half of the reading public, we think the history of letters, the peculiarities of authors, and the *modus operandi* of book manufacturing, must prove instructive to a large class of persons.

History of Letters. It is a strange, and yet a well-authenticated fact, that there is no continuous narrative extant of the rise and advancement of writing, learning and authorship, and yet these have moulded thought and delighted and refined man for centuries.

Writing was an art of exceedingly slow growth. At first it was pictorial, then modified according to necessity, for as records became voluminous, the scribes were obliged to abridge the representations. The transition from pictures to signs of sound was very gradual. This is confirmed by travellers of all ages, and we find that pictorial writing, or hieroglyphics, is peculiar to all tribes in a savage or semi-civilized state. The Egyptians carried this art to great perfection, and reduced it to a complete system, and hence they are generally, but erroneously, supposed to have been the inventors of letters. So obscure is the history of this noble science, that many learned men have recorded their belief in its Divine origin, asserting that God communicated it to Moses; and Plato, Diodorus Siculus, and even the great Cicero, were of opinion that letters emanated from the gods.

We can smile at these conjectures, and yet not be surprised at their existence. Aristotle was in advance of his contemporaries in more than one of his views, and he shrewdly tells us that the alphabet was invented to record sound. "Letters," says he, "are marks of words, and as words are sounds, significant letters are marks of such sounds." He was correct, and the originators of the system were of his opinion. But to carry this no further, it may be said with confidence that the

Phœnicians are entitled to the honor of inventing letters, and to them we owe the imperishable and invaluable art.

Books were known to the ancients, but in their form and character they bore no resemblance to ours. Authorship appears to have been as slow in its growth as the development of letters; and the difficulties that beset writers were such as we never can realize. Several kinds of materials have been used to make books at different times, not known in the trade now. Plates of lead and copper, the bark of trees, bricks, stone and wood, were the substances formerly employed to engrave such things upon as men were willing to have transmitted to posterity. Josephus speaks of two columns, one of wood, the other of stone, on which the children of Seth wrote their inventions and astronomical discoveries. Hesiod's works were originally written on tablets of lead—the ten commandments delivered to Moses were on stone, and the laws of Solon were inscribed on planks of wood. Tables of wood, box, and ivory were common among the ancients, but when of wood they were latterly covered with wax, and the letters traced in the soft matter of the coating so as to be easily obliterated. The leaves of the palm were afterwards used instead of planks, and also the finest and thinnest parts of the barks of such trees as the lime, the ash, the maple, and the elm; whence comes *liber*, which literally signifies the inner bark of a tree. These were rolled up in order to be removed with ease, and hence called *volumen*—a volume—a name now used to designate a book. The tilia, or phillyrea, was also used, and Egyptian papyrus, out of which a paper was made. By degrees wax was used, then leather, especially the skins of goats and sheep, of which at length parchment was produced. The first books were in the form of blocks and tablets; but when flexible matter came into use it was found convenient to make books into rolls, which were composed of several sheets fastened to each other and rolled on a stick, the whole forming a cylindrical column, with a handle at one end. The title was stuck on the outside, and the volume when extended might be a yard in width and fifty in length. The square form, so common now, was known to the ancients, but not much used. Notwithstanding the immense labor required to produce a book in those early days, we are told that the library at Alexandria supplied the four thousand baths of that city with fuel for six months, the volumes having been thus destroyed by order of Caliph Omar, A. D. 642.

Having thus traced the history of letters to a time when literature was established upon an endurable basis, our object shall now be to sketch the history and condition of the book trade as at present conducted. The trade comprises three important classes of persons, all of whom are essential to its successful prosecution. These are, Authors, Book Manufacturers, and Publishers.

1. Authors.—The author is properly placed at the head of the list, as he is first in importance, first in fame, and first "in the hearts of his countrymen." What a host of undying names throng the memory at the sound of the word! In ancient times we recall Homer, the mighty intellect; Plutarch, the unrivalled biographer; Tacitus, the prince of historians: and in later days, Shakspeare, the monarch of all, and in his train follows a retinue whose names and words are as lasting as the stars.

Authorship, as a profession, cannot be said to have fairly taken root in England until the days of "Good Queen Bess." A stern healthy system of thought characterises the writers of her day, and probably no age produced so many really talented men or gave birth to so many books that are truly valuable. But, alas! if we examine the private lives of those whose works we venerate, how little happiness—how much misery. Irritability, extreme sensitiveness, indifference to money, and unfitness for business, have been the bane and characteristics of nearly all. D'Israeli has written a volume on the peculiarities and calamities of celebrated authors, and the record is a sad one. There is Dr. Johnson, the literary giant, walking many a night with Savage, the poet, around St. James' square for want of the means to obtain a bed; or dining at his publisher's, separated from the rest of the company by a screen, to hide his shabby appearance. There is Goldsmith pawning his coat for bread. There are Spencer, Butler and Boyce, starving to death; and Chatterton committing suicide at an early age, after being four days without food. If we go back to an earlier period, we find that Sophocles, the poet, was brought to trial by his children as a lunatic; Socrates, the sage, put to death as a corrupter of youth; Plato accused of lying, avarice, robbery, incontinence and impiety; Bacon, the monk, abhorred as a magician; Virgilius, the Bishop of Saltzburg, burned for having written that Antipodes existed; Galileo imprisoned and compelled to disavow his sentiments; Cornelius Agrippa obliged to fly his country for having displayed a few philosophical instruments; Petrarch constantly in danger of his life from the priests, and Descartes horribly persecuted in Holland, and threatened with the stake by Voetius the bigot.

Fortune has rarely condescended to become the companion of genius. Modern literature furnishes some sad examples of this fact, and the past is not destitute of instances. Xylander sold his notes on Dion Cassius for a dinner; Cervantes, the author of Don Quixote, wanted bread; Camoens, the great epic poet of Portugal, perished in the streets; Tasso was so poor that he was obliged to borrow a crown to subsist on for a week; Ariosto was in extreme poverty; Du Ryer, a French poet of celebrity, wrote for 100 sous the hundred lines; Corneille died wanting a little sustaining broth; Dryden sold ten thousand verses to Tonson for less than $500; Stowe, the entertaining chronicler of London, quitted the tailor's board to devote himself to letters, but was glad to go back to the shears; Rushworth, the author of Historical Collections, died in jail; Bunyan wrote his great work in prison, while supporting himself and family by making stay laces; Savage sold his Wanderer for £10, and Milton disposed of his immortal poem for the same sum, being too poor to undertake the printing himself. De Foe, the author of Robinson Crusoe, was often in prison, and wrote his Jure Divino in Newgate.

We are happy, however, to be able to turn to a brighter page. Within the last century the profits of successful authorship have certainly improved, and in some instances the pay has been munificent. But, unfortunately, saving habits do not appear to belong to literary men. They, as a class, seem to be reckless in expenditure and regardless of consequences. Improvidence is their besetting sin, and when fortune favors them, they too often squander her gems most lavishly and die in poverty. Sir Walter Scott, at one time, was in receipt of $60,000 per annum from the sale of his works, and yet he died a bankrupt. Dickens' annual income has been estimated at $100,000, but we notice that recently he has been compelled to fly to the continent to escape the too urgent demands of his wine merchant.

In the infancy of English authorship, it was the custom for writers to publish by subscription, but this begging plan rarely afforded much return. The system of dedicating works to great people was also much in use, being a polite way of handing a man down to posterity for the sake of a little present aid. This, however, has been long discontinued as a rule, and works come forth under different auspices.

To illustrate the increased profits of authorship within the last century, we give a few instances. Gay received $2000 for the "Beggar's Opera," and $5000 for his poems. Broome, the translator of the Odyssey, got $3000 for that work. Fenton was paid $1500 for four books of the same poem. Pope received $1000 for editing an edition of Shakspeare. Thomas Halcroft was paid $6000 for his translation of the King of Prussia's works. Colman, the elder, got $1500 for the "Poor Gentleman," and "Who Wants a Guinea." Theodore Hook's "Sayings and Doings," yielded him $15,000, and $3000 were paid him for "Births, Marriages and Deaths." In addition to these very large sums, he received $2000 a year as editor of Colburn's *New Monthly*. James Smith got $5000 for four plays from C. Matthews for his entertainments, and Murray paid Lord Byron, for a part of his works, £15,455, or about $77,200. Tom Moore was quite as liberally paid, having received $15,000 from the Longmans for Lalla Rookh, and nearly as much from Murray for his Life and Letters of Lord Byron. This publisher is said to have given $10,000 for Washington Irving's Columbus, and Cooper's novels paid him handsomely. Prescott the historian, Longfellow the poet, Mrs. Stowe the novelist, and some other American authors, have made money by their works, but the majority have not. In fact, it will be found on close investigation, that but few authors reap either money or fame. Compared with other professions the successful ones are astonishingly scarce. The examples of fortune given above are extreme cases, and it must be remembered that, of the millions—and there have been millions—who have made authorship a calling, there are some hundreds only, or at best thousands, who are distinguished or widely known. When writers were not numerous and readers rare, the unsuccessful author fell into oblivion much sooner than now.

With the advance in pecuniary compensation, and the increase of intelligence among the people, the profession has however proportionably risen in public favor. Authorship is now honored in all lands. The fame of her writers is the fame of a nation. The author who leaves on record the impress of a powerful mind never dies. From the grave he holds silent converse with his race for good or for evil, often effecting as much by the sentiments he inspires in us as by the ideas he expresses.

Among the thousands who have devoted themselves to literature within the last few years, there is a class of growing importance called *compilers*. Their calling is to delve among musty folios and obscure manuscripts, and reveal to light in a new dress forgotten but valuable works. London, being the great receptacle of talent in Europe, is the central point for this class. There they have access to the treasures of the British Museum, where a hundred or more may be seen daily, consulting, transcribing and investigating the works of old and scarce authors. The valuable manuscripts of that institution, the earliest printed books, and the best modern works are at their command. A large room provided with writing tables, ink and pens is open to them, where they can silently toil, undisturbed from morning till close of day. The persons who resort here are of both sexes and from all parts of the civilized world. The treasures of knowledge revealed to them obtain a wider circulation by this liberality, and those toilers through old volumes are not plagiarists, but belong to a race of authors whose books have the charm of originality, while at the same time they reveal to the people works before known only to the wealthy, to vast libraries, or to that class of bibliomanists, whose enormous heaps of books, collected without intelligent curiosity, were properly called the "mad houses of the human mind," or "tombs of books."

II. Book Manufacturers.—This division of the book trade comprises Printers, Stereotypers, Binders, and perhaps type founders and paper makers. We shall consider only the arts and offices of the first three as being more immediately connected with the manufacturing of books.

1. *Printing.* Printing from *moveable* types is now generally conceded to have been the invention of John Guttenberg, or Guttemberg, as it is sometimes written, a native and citizen of Mayence or Mentz, in Germany. This event took place in 1438; and although there has been much controversy on the subject, and the honor has been claimed for others, it is now allowed that the credit belongs to John Guttemberg, originator, John Faust, patron and encourager, and Peter Schoeffer, improver of the art. The Chinese undoubtedly practised printing from *solid blocks* as early as the 930th year of the Christian era, and with the lights we now possess, we are satisfied that this art was brought to Europe by the Venetians, for we find that *playing* cards were so produced from solid blocks, at Nuremberg, in 1441; and before that period at Venice, for the *painters* of that city petitioned the magistracy in the year named, setting forth that the art and mystery of card making and of *printing* figures, which were practised in Venice, had fallen into total decay, through the great quantity of *foreign* playing cards and colored printed figures, which were brought into the city, principally from Germany.

The mystery of moveable types was a secret until 1462, when at the sacking of Mentz by Archbishop Adolphus, the workmen were dispersed and the art publicly divulged. When once revealed the invention spread rapidly, not only in central and northern Europe, but throughout the world. The original printers had brought their art to wonderful perfection, and many of the books printed by Guttemberg, Faust and Schoeffer, in respect to beauty, style and accuracy greatly surpass many works in our day. The great variety and symmetry of the types are matters of astonishment to modern printers, some of the founts being equal to our latest designs.

Types are pieces of metal, as almost every reader knows, each containing a separate letter, which, by being arranged into words, can be subjected to pressure, and by the aid of ink, leave on paper a fac-simile of their surface. They are in fact letters, and the printer uses them in what is called composition, or type setting, just as the writer, when he spells, uses the letters of the alphabet, with which his memory is stored. This arrangement was a masterly scheme, and the first printers stand forth as intellectual giants, when we reflect that they almost perfected the system of cutting, moulding, casting, and setting type in a very few years—at furthest not more than six.

William Caxton, the first to introduce the art into England, went to Cologne about 1470, and there learned the mystery. He soon acquired a knowledge of the invention, and printed a work in that city, his first effort, in 1471. He no doubt obtained type there, and in 1474 the first book printed in England was executed by William Caxton, in Westminster Abbey; in one of the chapels of which grand old edifice he set up the earliest press in Great Britain. This work was entitled the "Game and Play of Chess." This great and truly good man died at the age of nearly fourscore, and continued to work to the very last day of his existence. To his industry and genius the world owes much, and he deserves the credit of being the first to promulgate the propriety of cheap literature.

So rapid was the knowledge of printing, as practised by Europeans, spread, that presses were established in China, the Phillipine Islands, the Azores, Ceylon, Armenia, Macedonia, Iceland, North America, and even Japan, more than two and a half centuries ago. The art of typography was exercised in Mexico before it was in Ireland, and in Peru as early as 1570. It had been carried to Mexico in 1566.

It was practised by William Bradford, a native of Leicester, England, *near* Philadelphia, in 1686, or 1687, his being the second press set up in the British North American Colonies. In 1689 he removed *into* the city, and his earliest work was a quarto pamphlet by George Keith, respecting the New England churches. Franklin was Bradford's rival—probably a son of the above—and finally superseded him in the business of the city.

The first book printed in the United States was the "Bay Psalter Book," published at Cambridge, Mass., 1640. It passed through many editions here. It was printed in England in eighteen editions, the last appearing in 1754. It passed through twenty-two editions in Scotland, the last in 1759. It enjoyed a wider circulation and more lasting reputation abroad, than any American work since, having gone through *seventy* editions. The first Bible printed in America was the famous Indian Bible of Eliot, the Apostle. Fifteen hundred copies were printed, but they are quite rare and valuable, the Indians who spoke the language being extinct, and the language unknown. The work was executed in Massachusetts, in 1663.

Although the first printers attained to great perfection with their type, their presses were of the rudest description. The earliest used were like the cheese press, with a contrivance for running the form of types under the screw after the ink was applied. This mode was slow, and yet the press was not very much improved upon for some years, not, in reality, until the middle of the last century. Blaew, a Dutch mechanic, was the first to introduce a marked improvement, and after him came Clymer, the American, with his highly ornamented Columbian, a press at this day more generally used in England than any other worked by hand, whereas it is almost unknown to the rising generation of printers in the United States.

The early printers made their own ink, as well as their type. This substance was applied to the letters or forms by balls made of sheepskins stuffed with wool. With these one man *beat*, as it was termed, the type, while another laid the white or half printed sheet on the tympan, preparatory to making the impression. These balls were in use very generally up to 1824, and in fact were not entirely superseded by *rollers* until 1830.

The old presses were made of wood and worked by hand. The new are grand inventions, and bear no resemblance to their predecessors. Rollers composed of glue and molasses boiled and run into cylinders of the proper dimensions, by being poured hot into copper or iron moulds and allowed to cool, are now in use for inking the type. On hand presses these are either worked by boys or by steam power, being at the back of the press, and out of the way of the pressman. They are a part of the power press, and usually work on a traverse, being supplied with ink from an ingeniously contrived reservoir called a feeder, provided with screws so that a greater or lesser quantity can readily be supplied if occasion require. Ten tokens, or twenty-five hundred impressions were a good day's work on a hand-press for two men twenty-five years ago ; now a single Adams' power-press, the most beautiful printing machine known, turns off that number in an hour, the sheets being in some cases four times as large as those printed on the old hand-press.

As in many other mechanical contrivances, the Americans excel in printing presses. Hoe's last fast, a ponderous machine for newspaper printing, capable of executing sixteen thousand an hour, and almost endowed with intelligence, stands before all competitors suited to the purpose for which it is expressly designed. A press made in England known as Applegarth's, was evidently suggested by Hoe's. The type on both these machines is attached to the external surface of an enormous cylinder, and as it revolves it touches a certain number of smaller cylinders, at regular distances around which the paper passes, and thus in one revolution as many as eight impressions are obtained. The possibility of adapting type to a curved surface, was a subject of much speculation among printers for years, but it was, we believe, at last achieved by an American. All other presses, (those particularly noticed excepted,) are provided with horizontal iron plates or *beds*, on which the forms of type are laid and secured, as was the custom with the early printers, the type maintaining an erect position, and not a curve.

Setting the type is performed by men called compositors. There are two boxes, called cases, upper and lower, placed upon a stand, and each divided into a number of compartments. The types are placed in these, the capitals, small-caps, and several of the marks, in the top one; and the small type in the lower case, which lies on the top of the frame at a gradual inclination upwards towards the back, while the upper case approaches nearly to a perpendicular position. The copy is placed on that side of the upper case least in use, and the workman proceeds to set the type in a guage called a stick, using such type as are necessary in spelling the words in the manuscript. These are upside down when thus set, and read backwards; and in order to facilitate setting, nicks are usually indented on the front, at the foot or near it, to enable the workman to tell by feeling whether the type is in the right position for placing or not. When sufficient quantities are up, the matter, as standing types are technically called, is arranged into pages which are made up into forms of the proper size. Proofs are then taken and read. Corrections follow, after which one or more revises are obtained, and these being re-read and all errors rectified, the form is ready for press. When no longer required these type are distributed into the boxes whence they came, and again used in the way described above.

2. *Stereotyping.* Stereotyping is the mode of casting perfect fac similes, in metal, of the face of pages of moveable types. When printing came into general use, it was discovered that certain books called for frequent editions, and whenever such was the case the entire composition of the work had to be repeated. This was sought to be overcome by keeping the type standing, or tied up in pages and carefully laid away until wanted; but the interest of the money thus invested was lost as well as the use of the type, which were important considera-

tions. Many plans were proposed to surmount these difficulties, and at last, about the year 1725, an Edinburgh goldsmith, W. Ged, invented stereotyping. The plan is simple. After arranging the type in pages and getting it perfectly smooth and clean, it is placed in a hollow box or frame, the surface being slightly oiled to prevent the mould from adhering, when liquid gypsum or Plaster of Paris is poured over the page. The mould thus taken, if perfect, is dressed with an instrument and holes made to admit the metal. It is then dried, after which it is put into an iron casting box and the whole immersed in liquid type metal. Ten minutes usually suffice for casting. The box is then swung out of the molten mass into a cooling trough in which the under side is exposed to the water. When hard, the caster breaks off the superfluous metal, and separates the plaster mould from the plate. It is then picked, the edges trimmed, the back shaved to a proper thickness, and made ready for the press. These plates are usually from a quarter to three-eighths of an inch through, and in order to raise them to type height they are placed on blocks of the proper size and thickness.

Stereotyping, though now common and its advantages manifest, is of quite recent introduction in the United States. Lawrence Johnson, of the firm of L. JOHNSON & Co., *Sansom street, Philadelphia*, now the leading stereotypers and type founders in this country, was the first to introduce the art into Philadelphia some thirty years ago, and for many months was able to execute all orders with his own hands. At that time the business had been practised in New York for several years, and a foundry was first established in Boston; but with these exceptions stereotyping was unknown in the United States.

To the business of stereotyping Mr. Johnson added, in the year 1828, the more important one of type founding, by the purchase of the only foundry south of New York. This was the oldest type foundry in the United States, having been commenced in 1735, by the importation of tools and matrices from Germany, and afterwards greatly improved and extended by the enterprise and skill of Binney and Ronaldson. The business, since its introduction, has gone on increasing rapidly, till Philadelphia alone now contains eight or nine type and stereotype founders, employing not less than six or seven hundred hands. L. Johnson & Co. have recently added to their extensive establishment the newly discovered process of *electrotyping*. This process is one of the most simple and yet remarkable on record, and is destined to lead to wonderful results. A wax mould is made, say from a bas-relief, and this wax is made a conductor of electricity by being brushed over with powdered plumbago. The mould and plate of copper are placed parallel in a convenient vessel containing a solution of sulphate of copper. The copper plate must have a wire soldered to its upper edge, for the purpose of connecting it with that of a battery; and the wax mould must be similarly connected with the zinc element of the battery. The mould and the copper plate being thus placed on the metal and connected by wires with the battery, and the solution poured in, the whole is left undisturbed from twenty-four to thirty-six hours; at the end of which time the mould, being detached from the battery and withdrawn, will be found to be covered over with pure bright metallic copper, rough on the outer surface; but when separated from the wax by gently heating, will, if the operation has been successful, present a perfect copy of the bas-relief, every line of which, to the most delicate markings, will be transferred to the metal with more precision and accuracy than could have been produced by a cast made with copper in a state of fusion.

Many schemes have been tried to manufacture type from a more durable substance than ordinary type metal, but without success. Orchard, Willis and Co., of London, have gained the point, however, by coating the face of the letters with copper and even silver. Type so covered are three times more durable than in their ordinary state, and as many as fifteen millions of impressions have been taken from a single fount thus prepared, it is said, and then it was in good condition.

3. *Book-binding.*—Book-binding is the most ancient of all these arts, having been attempted more than two thousand years ago. Dibdin, in his Decameron, confidently states the fact, and a man of his general correctness is not likely to err. Books were formed into quarto and folio, at a very early period, and once in that form, a cover was a natural consequence. Books in manuscript were so made in Catullus' time, and in the age of King Attalus, a method of preparing skins for writing on both sides was discovered, and the king ordered the leaves to be made square, and afterwards put into covers. Specimens of illuminated manuscripts in binding, executed before the invention of printing, are still in existence, and there is proof that the art of binding in fair perfection has been practised for nearly twelve hundred and fifty years.

The old printers united with their trade that of the binder. They fastened the leaves of their books between wooden boards as thick as door panels, the coverings being cased with leather, which was sometimes strangely and grotesquely embossed. There were large brass nails with ornamental heads on the lids, and the corners were lavishly gilt and embellished. Clasps held it solidly in front, and the back was rendered strong with paste and glue, so as to last for centuries. If any of our readers happen to be the descendants of old German families, they may be able to call to mind some curious and cherished specimens of this style of binding on bibles and hymn books brought by their ancestors from Germany, many years ago.

After the printed sheets of a book have been properly dried and pressed by the printer's warehouseman, they are conveyed to the bindery, where they are folded by females to the requisite form, and sewed into books. They are subsequently glued, pasted, cut, hammered, and pressed; gilded or otherwise ornamented. Where the business is conducted on a large scale, it is found more desirable to classify with respect rather to the style in which the book is to be bound, than to the nature of each process. "*Making up*," comprises folding, collating and sewing. *Forwarding* follows; and that is a skillful operation. The case, or back, is glued to the folded sheets, two or three minor processes are then gone through with, after which the rounding of the back and hollowing of the front are executed. The graceful convexity of the one and concavity of the other, are as curious in the mode of production as they are pleasing in appearance. In the process of rounding, the book is laid on a bench, held or pressed by the left hand of the workman, and hammered near the edge, with such a peculiar movement of the left hand as causes the back to become rounded while the hammering proceeds. The state of the back is such as to enable the sheets to yield to the rounding action of the hammer, being coated with glue not yet dried; and the subsequent drying of the glue retains the sheets permanently in the position they thus acquire.

For the purposes of binding, cloth is the material most extensively used in the United States and Great Britain. Milled boards are a modern contrivance. In France and Germany very many works are merely placed in thick paper covers. But the most durable of all substances for this purpose, are morocco and Russia leather. All others will decay in fifty or sixty years, generate worms, or invite damp and mildew.

Half-binding is a style of binding in which the back and corners are covered with leather, while the sides are of paper or cloth.

Nothing adds more to the attractive appearance of a book than a handsome binding, and many antique books command high prices, solely because they are handsomely bound. One of the most noted of the English binders was an eccentric sot by the name of Roger Payne. Though so skillful in his profession that the possessor of a volume bound by him is now considered a fortunate man, he was generally clothed in rags, and always in a state of complete destitution. In

Dibdin's Decameron, there is a finely engraved portrait of him on steel, in which he is represented as slip-shod, with trousers out at the knees.

III. Publishers.—We now come to the division of the book trade, who sell the books that have been manufactured. A publisher is one who makes new works known to the public, and circulates them in the channels of trade. This office is inferior only to that of the author, and in some cases even superior, for experience has shown that it is often less difficult to make a book than to sell it. In the infancy of the typographical art, the manufacturer of books was also their publisher. Caxton, to whom we have referred as a printer, was a publisher, and is said to have managed his business so cautiously, that of the sixty-four books published by him, not one failed to pay its cost. This may call up the experience of modern publishers, and we doubt whether one among all can show so clean a balance sheet. The progress of the trade from the start has been steady and regular, unless we except the last half century, when it has been astonishing. From Caxton's time to that of Thomas Hacket, there were two thousand nine hundred and twenty-six books issued in England. From 1474 to 1600, we find the names of ten thousand books recorded, or an average of about seventy-five for each year. The Stationers' Company of London, established, we believe, in Elizabeth's reign, was among the first regularly organized attempts to separate publishing from printing. For a time they aimed at monopolizing trade and establishing high prices for their publications. A complaint was made to the crown by the printers and stationers of the city, who charged that this monopoly would create "excessive prices of books, prejudiciable to the state of the realm," but Mr. Barker, king's printer, shrewdly gave it as his opinion, that there was more danger of ruin than gain by printing a few books at high prices. From 1700 to 1756, we find five thousand two hundred and eighty books published, and within this period we first hear of large editions. Some works attained a circulation of thirty thousand, and Millar, the publisher, is said to have cleared the fabulous sum of $90,000 by "Tom Jones."

One of the earliest expedients resorted to by publishers to secure large sales, was the system of issuing works in numbers. Stackhouse's History of the Bible made its appearance in numbers, and in the middle or about the last quarter of the eighteenth century, works of all kinds, histories, novels, and poems, were issued in that form. The leading publishers of number works of our day are Tallis, Payne, and Virtue, of London, but we doubt whether the system is meeting with as much favor as in former years. Its success has always depended on the fact that men, or rather women, forget that four quarters make a dollar, for it is notoriously the costliest mode of purchasing books that can be adopted. The effect, however, of the system has been beneficial to literature. These numbers being usually sold by agents, they visit and get subscriptions from hundreds of people who otherwise would not think of purchasing a book, or of calling at a bookstore. As a business, number issues are not always profitable. The trade is irregular, and sales cannot be calculated on with any degree of certainty.

The ways of publishers are not at all times ways of pleasantness, nor are their paths always paths of peace. From time immemorial there has been a want of harmony between the views of authors and of publishers, and while time lasts we presume there will be. Charles Lamb writes to a brother poet, "The booksellers consider us their journeymen—they hate us, and cheat us, and oppress us, and would wring the blood out of us, to put another sixpence into their mechanic pouches." Campbell, on the occasion of a literary dinner, gave the health of Napoleon Bonaparte, and upon being asked what Napoleon had ever done for literature, replied, "a great deal, he once shot a bookseller." One cause of the disagreement is, that authors are prone to entertain sanguine views of the popularity of their productions, and when these are checked by a decided refusal to publish, they are apt to lose patience. Again, if their manuscripts are accepted, they rarely consider the price an adequate compensation for the labor. It is no doubt true that publishers frequently err in rejecting manuscripts. Harpers are said to have refused "The Wide, Wide World," now the second most popular American novel published in England; and we have been told, without vouching for its correctness, that "Uncle Tom" went a begging among the trade. But publishers more frequently err by accepting than by rejecting manuscripts, and instances have been known where they have published the book of a sanguine author, when they knew it would be a failure. The statistics of the trade show that only one book out of every two hundred published, gets to a second edition; out of five hundred not more than one attains to a third edition; and out of a thousand only one reaches a fourth edition.

Another cause of complaint on the part of authors against publishers, more founded in justice, is, that publishers frequently neglect works they have undertaken to publish, or in other words do not take the necessary means and pains to bring the works to the notice of the public, and circulate them in the channels of trade. This is a grave and serious charge, where authors are interested in the sale, and when substantiated should subject the publisher to a loss of his standing and business. A mere bookseller fulfils his duty in keeping books on hand ready for orders; but the very definition of a publisher implies that it is his office to make a new work known, not only to the trade, but to the reading public. A publisher has no more right, on the plea of too much business, or on any other plea, to neglect this duty where an author is interested in the profits, than a partner has to neglect the interests of a partnership.

To attain success in the publishing business, two things are especially requisite—a *large bookselling connexion*, and *a liberal system of advertising*. The latter is indispensable in all cases. Without the former a man must have very popular books indeed, which booksellers must have in order to do much business; but with a large bookselling connexion a house can generally get rid of an edition of any work of ordinary merit without loss. One great outlet for the disposal of unsaleable productions, is the system adopted by many publishers of *exchanging* each other's publications. Their trade list usually embraces two classes of works; those held on "exchange account," and others on "cash account;" but this course is confined to those who combine a wholesale bookselling with their publishing business. The arrangements between authors and publishers are various, and depend upon agreement. In some cases the publisher purchases the manuscript outright, and takes the copyright in his own name: in others, the author is allowed a certain sum for each copy of the work printed, or a certain proportion of the profits; and in a few cases, when the author has means, he pays the expense of manufacturing himself, and allows the publisher a discount off the wholesale price. The first arrangement is the best for the author, where the work is of limited interest or of doubtful popularity—the second is the most usual—the third is decidedly to his interest where the book is a popular one, though in this case he becomes in a measure a co-publisher.

In every profession there is a class who may be called *chiffoniers*. The chiffoniers of the book trade are the publishers of trashy *cheap publications*. These publish volumes as a man sells oysters from a cart, not knowing and not caring whether the inside be good or bad, so long as the outside looks well, and people buy. In England members of this class travel through the country to learn what is in demand. If "Jack Shephard" is wanted, they publish an edition of "Jack Shepard," or if "Mysteries," or "Dying Speeches" are called for, they are forthwith supplied. In the United States these chiffoniers republish the works of their English contemporaries, and next to rumsellers, do more than any others in filling our penitentiaries. We wish, however, to be distinctly understood here, as not embracing in this class those who publish *useful works* in a *cheap form.* By no means. These are as much the benefactors of their race, as the former are their destroyers.

Publishers as a class are shrewd far-seeing men and in some cases pay enormous sums for indirect benefits. One of the most remarkable instances of this that we have heard of is an arrangement between Routledge & Co., of London, and Edward Lytton Bulwer, by which the former agree to give the baronet $100,000 for the privilege of publishing his novels in shilling form for ten years. It has been calculated that their profits will only be $100 on ten thousand copies; consequently their sales must be immense to repay the original outlay, without taking into account any direct compensation for themselves. The principal inducement to the arrangement, it is presumed, is that the fame they will derive as publishers of Bulwer's novels, will enable them to sell other books which no one else can sell, and out of which they will make money.

The publishing trade of the United States has sprung up almost entirely since 1800. There are now three hundred and fifty-five publishers in the United States; two thousand booksellers; fifteen thousand printers and three thousand five hundred bookbinders. The number of new works issued in 1853 is said to have exceeded a thousand. To illustrate the operations and extent of this business, we propose to subjoin sketches of a few of the leading houses.

Leading Publishers.—At a literary dinner given recently in honor of Mr. Hart, on his retirement from the bookselling business, Henry C. Carey, Esq., the distinguished political economist, made a statement which excited a good deal of attention, and some doubts, that "Philadelphia has, perhaps, the largest book-distributing house in the world." The house referred to was Lippincott, Grambo & Co., 20 North Fourth street, Philadelphia. Having the pleasure of a personal acquaintance with the members of this house, the editor of this work deemed it his duty, on this occasion, to examine the foundation on which the statement must rest, an attempt, however, in which he has only partially succeeded, on account of the extreme modesty of the proprietors, who fear that facts will savor of ostentation.

The house was established some thirty years ago by John Grigg, Esq., long and widely known as the most successful of booksellers, who, with his partners, conducted the business under the style and firm of Grigg & Elliot, and Grigg, Elliot & Co., until the year 1849, when Mr. J. B. Lippincott purchased the respective interests of Messrs. Grigg & Elliot, and in connection with the junior partners of the old firm, established the present one. This purchase was probably the heaviest ever made by one individual in the book trade. Mr. Lippincott had previously, for some years, been conducting the bookbinding and bookselling business individually, though under the style of J. B. Lippincott & Co., and with such success that at the time Mr. Grigg made proposals to sell, he also was contemplating a retirement from the business, with a fortune sufficient for his desires.

The firm of Lippincott, Grambo & Co. is composed of five partners, Messrs. Lippincott, Grambo, Remson, Claxton and Willis, each having distinct and well defined duties, but none of them sinecures. The general business of their establishment comprises that of *Bookbinders, Publishers*, and *Wholesale Booksellers* and *Stationers.* In their binderies—of which they have two, one at the corner of Fourth and Race streets, in which their celebrated fine work is executed, the other occupying the upper stories of their store, devoted to cheaper styles, blank books, &c.—they afford employment to about three hundred hands, who in turn deliver them about two thousand finished volumes per day. Mr. Lippincott is now building for his individual account a bindery at the corner of Fifth and Cherry streets, which, when completed, will be one of the largest in the country. As *publishers*, they have had set up the past half year, nearly ten thousand solid octavo pages of new standard works, of which they have issued editions varying from two to fifteen, besides the large amount of miscellaneous matter of which the public is aware. They have stereotype plates of over two hundred volumes, from which they are constantly working off editions to supply the current demand. Of Bibles and prayer books alone, they sell upwards of fifty thousand copies yearly, and of medical works their list is an important one. They intend hereafter, we believe, to devote *more* attention to standard, scientific and professional works, and less attention to what is called popular literature, a course rather to be regretted than rejoiced over, for with their facilities they can circulate useful, healthful, soul-ennobling books, in districts where they are most needed, to the great advancement of our country's weal.

In the above branches of their business, they are perhaps equalled in extent, if not surpassed, by other houses, but as *Wholesale Booksellers* and *Stationers,* we believe them to be wholly unrivalled. One or two facts, we think, will substantiate this opinion. They have about five thousand customers, country merchants and booksellers, whom they supply. For two months in each year, they ship on an average seventy boxes daily, weighing about three hundred pounds each, or in other words, about ten tons of books, blank books, and stationery per day. Their bills for boxes, porterage, &c., exceed $10,000 per annum. Lastly, the amount of their sales for the year 1853, we estimate at between one and a half and two millions of dollars.

It is needless to say how much ability and industry and energy are required to conduct such a book business, the most laborious of all the mercantile pursuits, nor need we be surprised to learn that for months their store is not closed more than four hours out of the twenty-four, and that it is not an unusual circumstance to find all the partners there together at one o'clock in the morning. A patronage so vast, is undeniable proof of high mercantile qualities, and is in itself a sufficient eulogy.

John P. Jewett & Co., of Boston, is another publishing house which, from a small beginning, has attained a world-wide fame, and which in all the gradations of its rise has preserved a uniform character for liberality and integrity. The biography of the founder of this house, is the history of another self-made man. Mr. Jewett is the son of a clergyman who was too poor to give his children any capital save that of a good education. At the age of twenty-one, having acquired a practical knowledge of the book business, he commenced business on his own account, with the slender sum of fifty dollars, but he had what was worth more than money to him, an active, ardent temperament, a good character, and the credit which accompanies it; a thorough knowledge of every branch of the book business, and a determined spirit of perseverance which "never surrenders."

Eight years ago, he hired a shop which had been occupied by cabinet makers, and after remodeling it to suit his taste and occupation, he began to try his fortune in Boston. Here he had to contend with heavy capitalists not only, but now and then some antiquated fogy would caution him against the unpopular writings of reformers; and not a few of the *fossilocracy* threatened to withdraw their countenance and support if he did not desist from his radical course. But look at the result. Mr. Jewett has the satisfaction of not only reaping wealth and fame, of not only seeing his capital of $50 increased to a business which amounts to hundreds of thousands of dollars per annum; but the higher satisfaction of knowing that he has contributed not a little to widen the foundations of virtue and ameliorate the condition of mankind.

The trade list of this house is especially remarkable for the excellence and popularity of their publications. There are scarcely any that one would not wish to read and to own. In every useful department of literature, theological, moral, agricultural, miscellaneous, the best works by the best authors may be found there: and in point of popularity some of their publications are universally acknowledged to be wholly unrivalled. An ability to sell a large quantity of a good book seems to have been a characteristic of this house from the start. Among the first works issued by them were the inimitable lectures of Henry Ward Beecher, and of these they sold twenty-six thousand five hundred copies. The success of Uncle Tom, which placed both author and publisher in the front ranks of their respective professions, is known to all the world. But these are not all. Of "Shady Side" Messrs. Jewett & Co. sold forty thousand copies the first year after its publication; of Mrs. Child's life of Hopper fifteen thousand copies were sold in the first nine months, while of the "Lamplighter," which bids fair to rival "Uncle Tom," they sold forty thousand copies in the first two months. Whether these publishers are extremely fortunate in their authors, or whether the authors are largely indebted to the publishers I cannot determine, but certainly these sales are without parallels in the history of the book trade, and we are inclined to think that the great success of a book often depends as much on the ability, energy and facilities of the publisher as on the merits of the author.

In his dealings with authors we have never heard of any complaint against Mr. Jewett, but much commendation. As a gentleman he is as estimable as he is eminent as a publisher. We would that the Bungays and Bacons of Paternoster Row, the men who are as insolent to the unknown author as they are servile to the popular one, would visit Cornhill and learn of Mr. Jewett that success in the trade is not incompatible with the possession of qualities that adorn manhood.

D. Appleton & Co. of New York are one of the oldest and most respectable of the publishing houses in the United States. The house was founded some twenty years ago by the late Daniel Appleton, who was distinguished both for his high character as a merchant, and for the beneficial influence he exerted on public character, by the good taste and careful morality displayed in his selections for publication. The firm of Appleton & Co. now consists of five brothers, sons of Daniel Appleton. They occupy beyond all comparison the most splendid bookstore in the world, being as remarkable in its interior architecture and decorations, as for convenience and amplitude. The Appletons have invested in their business about $800,000; their sales for the year 1853 amounted to not less than $1,000,000. In their stock may be found the rarest works, in every department of literature and in all languages, while they themselves print largely in foreign languages for exportation, and compete successfully with Parisian and other foreign producers of French and Spanish books.

The firm of Ivison & Phinney, No. 178 Fulton street, New York, formed at the commencement of the present year, unites the active partners of two well known publishing houses, that of Newman & Ivison, formerly Mark H. Newman & Co., of New York, and that of Phinney & Co., Buffalo, formerly H. & E. Phinney, of Cooperstown, N. Y. The late Mr. Newman was well known as an intelligent and liberal philanthropist, and as an unusually sagacious and high minded publisher.

The gentlemen constituting the present firm are both distinguished by many excellencies, business and personal. Mr. Ivison, commencing life in moderate circumstances, was the first to make the city of Auburn the conspicuous inland book mart it long has been. His character and business energy had given him an honorable position in "the trade" prior to his connection with the late Mr. Newman, in 1846. Mr. Phinney is of a family of publishers. Judge Phinney, his grandfather, published sixty years ago one of the earliest newspapers established west of Albany; his two sons continued his business, publishing several successful school books, and a quarto Bible, of which they sold one hundred and fifty thousand copies. Mr. H. F. Phinney, now of the firm of Ivison & Phinney, becoming a partner in 1839, the house greatly increased their publishing operations. Ten years later he removed to Buffalo, where, with a brother and other partners, he organized a publishing house under the style of Phinney & Co., which is now one of the largest and wealthiest establishments in the interior. The publications of this house, and its predecessors, have been almost wholly of educational, historical and religious works, and all of a useful and substantial character. Their *American Educational Series* comprises many books of the highest merit, and some of a popularity unprecedented in this part of the world. Their *Sanders' Reading Books* circulate over half a million a year. A new series of them is just completed with many improvements. *Thomson's Arithmetics* sell over one hundred thousand annually. *Willson's Histories*, *Fasquelle's French Series*, *Woodbury's German Course*, and other admirable scientific text books, are among their prominent publications, several of which, besides being used from one end of our country to the other, have received the compliment of being reprinted in London, and translated into other languages. Nearly all these books are original American works, paying copyright to American authors. The plan pursued by Ivison & Phinney, has been to aim first to produce the *very best books* in each department, and, secondly, to make the fact widely known by *liberal advertising* in appropriate channels, and their success has abundantly satisfied them of the correctness of that policy. With such antecedents and with the experience, capital, and character, which they bring to their business, it is fair to expect that this house will speedily take a place among the staunchest and most honored of the publishing firms of the United States.

The firm of Daniel Burgess & Co., of New York, (now composed of Daniel Burgess and Richard A. Storrs,) known at its establishment, in 1845, as Paine & Burgess, more recently as Cady & Burgess, maintain, by their school book publications, the foremost rank amidst such as influence general education. This pre-eminence is attributable to the character of the works issued, which, constructed on universal principles, meet wants peculiar to scholars and instructors; enabling the former, by happy elucidation, quickly to comprehend and easily remember, and relieving the latter from that drudgery which had previously been considered a part of their calling. No school book is issued by them that fails to meet these requisitions.

They have been, with their predecessors, the exclusive publishers of R. C. Smith's popular Series of Geographies and Arithmetics, long familiarly known to the public, and always securing large and extensive sales.

These, with others, have been sold by millions; the sales even of one year reaching over half a million volumes. It may be added that the members of this house have always been distinguished for the liberality with which their dealings have been conducted.

A. S. Barnes & Co., No. 51 John street, occupy an enviable position in the ranks of American publishers. They commenced their career at Hartford, Connecticut, in 1838, as publishers of as many of the mathematical works of Professor Charles Davies as were then written. Having spent several months in travel, for the purpose of more generally introducing Professor Davies' series, Mr. Barnes removed to Philadelphia, where, with his partner, he carried on his business for five years, at the end of which time they established themselves in the store which they have since occupied in New York city.

The trade list of this house embraces a considerable number of historical and miscellaneous works, of which they have sold large editions, but their attention has been principally devoted to school and college text books, of which they publish a number of the greatest excellence. The extent of their business is illustrated by the fact, that they sold, in 1853, not less than eight hundred thousand volumes, mostly school books, of which more than one-fourth were of the mathematical series of Professor Davies. There is no house in the trade whose success and position afford us more satisfaction, for there is not one that possesses in more eminent degree the qualities that deserve success.

Stringer & Townsend, 222 Broadway, corner of Ann street, are among the most popular and enterprising of the new school publishers. They are the successors of Burgess & Stringer, who commenced at the same place early in the year 1843. Within the year Mr. W. A. Townsend joined them, and at the end of five years Mr. Burgess withdrew, leaving the present firm of Stringer & Townsend.

Burgess, Stringer and Townsend were the pioneers in that astonishing run of cheap publications, which has had the effect of increasing in so extraordinary a degree the circulation of books in the United States. Some newspaper offices, indeed, had previously issued a few pamphlet editions, which were sold at low prices, but this house was the first in the trade to prosecute the business of cheap publishing with any efficiency, and their example has revolutionized the publishing policy of the world, since, as is well known, the European system of cheap publishing was an offshoot of the American.

The publications of this house are very numerous, and some of them have been eminently successful. Of Dumas' novel, *The Count of Monte Cristo*, they have sold more than one hundred thousand copies. They began publishing for the late J. Fennimore Cooper, in 1845, in which year they brought out his *Satanstoe*, which was followed by half a dozen original works by him. In 1850, nearly two years before his death, they bought the copyrights and stereotype plates of all his other novels and tales, and issued the first uniform and complete edition of them in thirty-three volumes. They have sold of Cooper's works altogether more than three hundred thousand volumes, and since his decease, the increase in the sales of these great productions, has been constant and rapid, so that the Cooper copyrights are a liberal fortune in themselves. The famous sporting works of "Frank Forester," (H. W. Herbert,) are also on their list, and they are extensively engaged in scientific publications, such as the *Practical Draughtsman*, the *Practical Mechanics' Journal, &c.*, and they issue the American edition of *Braithwaite's Retrospect of Practical Medicine*, for which they pay the English publisher a liberal copyright. Of *The Old Brewery*, they sold in thirty days more than thirty thousand copies. Another very important work which they have issued is a *History of the French Protestant Refugees*, translated from the French of M. Weiss, by H. W. Herbert. The *Cottage Builder*, and a companion volume, *The Rudiments of Architecture and Building*, are among the most useful and admirable books they have published more recently. Though they have given to the public a large number of cheap books, their intention is generally to give good editions of good authors. Their list comprises about two hundred works, many of which are of the first class.

The agents and correspondents of Stringer & Townsend, in various parts of the Union, are more numerous than those of any other house in the same line of business.

Mr. GEORGE P. PUTNAM is a publisher to whose enterprise and energy many of our most popular authors are largely indebted, and whose name will always be held in high esteem by all admirers of elegant literature. Mr. Putnam is himself an author, having published while in London, as resident partner of Wiley & Putnam, a vindication of this country against various foreign prejudices and misrepresentations, under the title of *American Facts;* and his knowledge and taste in literature have made him in an unusual degree a favorite with authors. During the last five years he has issued from four hundred to four hundred and fifty volumes, four-fifths of which at least were original. He has been the publisher of Irving, Bryant, Bayard Taylor, Dr. Hawks, Lowell, and other eminent writers. In the short period since he became Mr. Irving's publisher, he has paid that distinguished author over $25,000 for copyrights; having entered into an agreement, which, we understand, was entirely satisfactory to Mr. Irving, to pay him for this period $8500. Mr. Putnam's Monthly, to which he is now giving a large share of his attention, is one of the most able and interesting of American magazines. Relying less than some of its rivals upon typographical beauty and popular illustrations for effect, it is their superior in all qualities that command the approbation of the intellect, in its encouragement to native talent, and above all in the powerful influence it is wielding in favor of public morality and national honor. It deserves the warmest appreciation and most liberal support of every patriot and scholar in the land.

CHARLES SCRIBNER, who, in 1850, succeeded to the entire proprietorship of the business of Baker & Scribner, Brick Church Chapel, New York, is also emphatically an *American* publisher. His publications already amount to more than two hundred, and the large proportion of one hundred and seventy of them are original, by American authors. Of Mr. Headley's various books, he has sold more than two hundred thousand volumes; of the books of Mr. Mitchel, ("Ik. Marvel,") the sales have amounted to seventy-five thousand volumes. N. P. Willis, Mrs. Kirkland, R. H. Dana, Allston, Herbert, Drs. Spring, Alexander, Cheever, and others, for whom Mr. Scribner has published, have all likewise been eminently successful through his judicious and energetic administration.

EDWARD H. FLETCHER, 117 Nassau street, is the leading publisher in

New York, of the Baptist denominational books. His present list embraces sixty-one works, forty-three original, and eighteen reprints, of which about thirty-two thousand volumes were sold last year. Dr. Dowling, Dr. Hague, and Professor Duncan, are among the authors for whom he has published.

The names of Harper & Brothers are more familiar to the reading public than those of any other publishers. They have been, as is well known, among the most extensive publishers of miscellaneous works, but their habit of looking at "the largest possible amount of the best reading" through foreign spectacles, has of late years diminished their popularity with American authors. A magazine which they publish has deservedly attained a circulation unprecedented in periodical literature.

J. C. Derby, the founder of the house of Derby & Miller, at Auburn, has recently removed to New York city, where, judging from his previous displays of tact, enterprise and activity, he is destined to take precedence among the heaviest and most successful publishers.

In Philadelphia, a number of the leading houses are engaged principally in the publication of educational literature. A well known house in this department, is that of Cowperthwait, Desilver & Butler, who, with their predecessors, Thomas, Cowperthwait & Co., and Desilver & Thomas, are among the oldest in the city.

For some years this house has devoted a large share of its attention to the publication of Mitchell's Geographical Works, of which they sell upwards of four hundred thousand volumes annually, and employ more than two hundred and fifty persons in their manufacture. Having constantly employed a strong geographical force of map engravers and others, and being very largely engaged in the publication of the various state and other maps, they are enabled to present the school series correct, both in maps and matter, up to the date of publication.

E. C. & J. Biddle are another firm, whose names are so identified with the publication of educational books, that their store is popularly known as the "Educational Bookstore." Many of the publications of this popular house are text books in our best collegiate institutions; and as they have been found useful aids in the hands of the thorough instructor, they deserve attention, examination and introduction, wherever *thorough* instruction is appreciated. Of this class, we may mention :—

I. A series of Class Books on the Etymology of the English Language, consisting of,—1. The First Book of Etymology, by Dr. Joseph Thomas. 2. The Class Book of Etymology, by James Lynd. 3. An Etymological Dictionary of the English Language, by John Oswald. These works are extensively used in the better class of

"Common" or "Public Grammar" Schools of our country, as in those of New York, Brooklyn, Philadelphia, Baltimore, &c., and their use is found to promote precision in the use of language, and to train the mind of the pupil to habits of analysis and generalization.

II. Professor Cleveland's two works on English Literature. The first of these, entitled "A Compendium of English Literature," consists of biographical sketches of the leading English writers from the fourteenth to the eighteenth century, chronologically arranged; together with appropriate selections from their works, and copious explanatory notes. The second is a sequel to the first, on the same plan; and continues the series of authors down to the present time. These works are used in a very large number of first class seminaries for the education of young ladies, and other educational institutions.

III. Professor Fiske's Manual of Classical Literature, on the basis of the German work by J. J. Eschenburg.

It is sufficient to say of this valuable and ponderous volume, that it is a text book in such institutions as Harvard University, Union College, the University of Pennsylvania, Dartmouth College, &c., and that more than eleven thousand copies of it have been sold.

IV. Professor M'Murtrie's Lexicon Scientiarum. This unpretending but valuable little hand book, is a dictionary of the terms used in the various branches of natural science.

V. Crittenden's Popular Series of Treatises on Single and Double Entry Book Keeping.

VI. Alsop's two works on Algebra, entitled "First Lessons in Algebra," and "A Treatise on Algebra;" both of which are used in many of the best educational institutions of our country, and are well adapted to make good mathematicians.

VII. Gummere's admirable Treatise on Astronomy, of which nearly six thousand copies have been sold, and which is the text book in the United States Military Academy at West Point, and many of the best collegiate institutions of our country.

VIII. And, lastly, we would name the Treatise on Navigation, which is the text book in the United States Navy, and the production of Lieut. M. F. Maury, U. S. N., whose labors as Superintendent of the National Observatory, and especially on his great work, the Wind and Current Charts, and the accompanying Sailing Directions, have earned for him a world-wide reputation as an indefatigable laborer in the cause of science, and a benefactor to the commercial world.

E. H. Butler & Co., are pre-eminent among the publishing houses of Philadelphia, for the elegance and fine taste displayed in their publications.

They were the first publishers who paid special attention to improving the manufacture of school books. Books of this class, instead of the coarse, dingy, and forbidding exterior, which formerly characterized them, are now attractive to the eye, and the revolution which has taken place in this respect, is due, in a great measure, to the example of this house, whose school books, in respect to mechanical execution, have long been models of style. Messrs. Butler & Co. have advanced their interests by this improvement, for all their school book issues have largely increased, and several of them have attained an enormous circulation. Some of the school books of this house have an annual sale of more than one hundred thousand copies.

The great feature of this establishment, however, is to be found in its publications of a professedly elegant character. In this department, we believe, they are confessedly unequalled among American publishers. Among the works of this kind issued by them, may be named Stevens' Parables of our Saviour, Hart's Female Prose Writers of America, Read's Female Poets of America, Goodrich's Gems of British Poetry, Macaulay's Lays of Ancient Rome, Odenheimer's Jerusalem, Stevens' Bow in the Cloud, The White Veil, by Mrs. Hale, together with a superb series of Quarto Bibles, and illustrated editions of Rogers, Campbell, Moore, Edith May, Kirke White, Keats, Hemans, Watts, and Tupper. These volumes are unquestionably splendid works of art. The paper, press work, engravings, and binding, all bear evidence, not only to the taste and skill of the enterprising proprietors, but to an inventive genius in the art of ornamentation, capable of bringing forth continually new styles of elegant embellishment. Books, such as those we have enumerated, are an honor and ornament to the country.

Sower & Barnes, 84 North Third street, have as yet confined their publications almost exclusively to educational works. The senior partner of this house, Charles Sower, is of a family of printers and publishers. He is a lineal descendant of Christopher Sower, one of the earliest publishers on this continent, and one of a sect called Mennonists, that settled Germantown, Pa., early in the eighteenth century.

In 1735, Christopher Sower published a quarterly journal in German, which was the first work of the kind in a foreign language published in the colony. The same year he published a newspaper, the first German Almanac, "Extracts from the Laws of the Province, by Wm. Penn," and several other works. At that time, all the type used in the colonies was brought from Europe, and finding this very inconvenient, he commenced a type foundry, and manufactory of printing ink. This was the first type foundry in the country, and the celebrated house of L. Johnson & Co., Philadelphia, claim to be the legitimate successors of Christopher Sower in the business. In 1743, he printed a quarto edition of the German Bible, Luther's translation, having 1272 pp. This was the largest work which had then been issued from any press in the colony, and was not equalled for many years after. The edition consisted of about one thousand copies, and was three years in press. Copies of this Bible were sold, bound, at fourteen shillings, and are now highly valued by book collectors. About 1744, he resigned his press to his son, and died about 1760. He was a man of large influence among his countrymen, and frequently acted as their representative in their intercourse with government.

His son, also named Christopher Sower, continued the business of his father, on an enlarged scale, printing many valuable books, and a weekly newspaper. In 1762, he printed a second edition of the German Quarto Bible of two thousand copies, and in 1776, completed a third edition of three thousand copies. He had by far the most extensive book manufactory then, and for many years afterwards, in the country. It employed several binderies, a paper mill, an ink manufactory, and a foundry for German and English types. He was well educated by his father, was ordained a minister of the German Baptist Society, and as a man of integrity was deservedly esteemed. He died at an advanced age, in 1784. He left several children, among whom Christopher (third), David and Samuel, were practical printers and publishers.

David Sower commenced the business in Norristown, on a reduced scale, and was succeeded first by his son Charles, and then by his son David, Jr., who continued the business until having acquired a liberal competency he retired. He is still living, and one of his sons is the senior partner of the well known publishing house of Sower & Barnes, in Philadelphia.

This firm promises soon to rival their venerable predecessor in the number and value of their publications, and having turned their attention especially to educational works, they seem to be actuated by the same principles which governed the founder of their house, in selecting only those which are calculated to advance the interests of education. Their first work of magnitude was "Pelton's Series of Outline Maps," intended to teach geography by cultivating the powers of observation. The work has been eminently successful, employing two manufactories, which are still inadequate to supply the demand.

This house is also interested in the publication of a valuable and useful series of Readers, Arithmetics, Grammars, Histories, and last, but not least, in Dr. Lambert's series of works on Anatomy, Physiology and Hygiene. The beauty of the lithographic and wood cut impressions of these works, as well as the novel and enlightened mode in which the subject is presented, teaching the best means of preserving mental and physical health, is calculated to make them the most popular, as they are already among the most scientific on the subject yet published. Messrs. Sower & Barnes are not only extensive publishers, but they are fast taking rank among the largest jobbers in books—their sales having nearly doubled annually during the last eight years.

William S. Martien, 144 Chestnut street, a publisher of more than twenty years' standing, is engaged in publishing Religious and Theological works, and has gained considerable reputation by his admirable selections, as well as the good taste which governs him in the mechanical execution of all his issues. His edition of Scott's valuable Commentary on the Bible has become the standard one, and sells more extensively than either of the others. He is also the publisher of the Revival Sermons of the Rev. Dr. Baker, of which three thousand copies were sold in six months after its publication, a sale not merely unprecedented, but extraordinary, we think, for a work of this character. The works of Rev. Drs. Alexander, Hodge, Junkin, Burrowes, and others, are to be found on the list of issues of this house. Nor have the juveniles been overlooked, as many a one will testify who has read the story of Robert and Harold; or, the Young Marooners. This volume has already reached the fifth thousand, and has been read, perhaps, with more universal admiration than any work which has passed through the press since the appearance of De Foe's great master piece. Every child pronounces it equal to Robinson Crusoe. His stock of Religious and Theological works is larger and more varied, perhaps, than that of any other house in the country, and while the business in these departments is very large, he also deals extensively in miscellaneous works of a standard character.

James B. Smith & Co., Philadelphia, who have long been known as leading manufacturers of Blank Books, have recently added to this business that of Publishers and Wholesale Booksellers, and bid fair to become equally prominent in all these departments.

As manufacturers of Blank Books, they have been established about twelve years, and having determined from the commencement to use none but the best materials, and to employ none but the most experienced workmen, the superiority of their manufacture so rapidly increased the demand, that they were compelled to seek larger and more commodious buildings for their purposes, which they have found at Nos. 144 and 146 Chestnut street, lately occupied by the American Sunday School

Union. At their present location they employ several hundred hands, and have all the latest improved machinery for the manufacture of books, from the smallest pass or copybook to the largest blank book used in any office, bank, or state department in the Union. It has been estimated that the rooms occupied by the workmen in their present establishment cover an area of two acres.

As publishers, their catalogue of publications contains the titles of nearly two hundred books, embracing many of the best scientific, classical, theological and miscellaneous works extant. Among their publications, we notice octavo editions of the English Poets, Shakspeare, Shelley, Burns, Goldsmith, and others, each embellished with twenty fine steel plates; Thiers' French Revolution, 2 vols., thirty-six fine steel plates; Patrick, Lowth and Whitby's Commentaries, 4 vols.; South's Sermons; the History of the Popes; Chambers' Information for the People, 2 vols., and a variety of other works. Messrs. James B. Smith & Co. are men of much personal popularity, enterprise and experience, and entitled to a cordial welcome in the ranks of publishers.

Hayes & Zell, 193 Market street, Philadelphia, are a young and enterprising firm rapidly rising in public confidence and popularity. They are the successors of Messrs. Troutman & Hayes, whose stereotype plates are now owned by them, and whose business, as wholesale Booksellers, Stationers and Publishers, they continue and are extending.

The trade list of this house, embracing a number of school, medical and miscellaneous works, is distinguished for the large proportion of those which have intrinsic merit and a permanent value. They are the publishers of Blair's Lectures on Rhetoric, University edition; Locke's Essays; Wordsworth's Complete Poetical and Prose Writings, edited by Professor Reed; all standard works; and quite recently they have issued Professor Hart's Essays on the Fairy Queen, one of the most superb publications of the day. They seem to have aimed from the start at attaining an enduring reputation as publishers, by identifying their names with works of acknowledged excellence, and to have preferred the silent thanks of quiet scholars to the noisy but transient success attending the publication of ephemeral literature. Commencing their business career with such aims, and noted as these young men are for close application to business, enlivened by enterprise, we look forward to the time when Mr. Carey's prophecy shall have been realized, that Philadelphia will ere long have many houses rivalling those celebrated Edinburgh publishers, the Chambers, to find the firm of Hayes & Zell among the number.

In Baltimore, Cushings & Bailey, 262 Market street; Walker & Medairy, 310 Baltimore street, and John Cushing & Co., 6 N. Howard street are the leading Publishers and Booksellers.

IV. Booksellers.—The last of our divisions of the book trade, comprise the booksellers. Their duties are plain and but little need be said concerning them. They purchase books from the publisher at a discount from the retail price and sell them to their customers. They are the main reliance of the publisher, and he who can secure their custom can count upon his fortune.

Booksellers may be divided into two kinds, LOCAL and PERIPATETIC. Every town in the United States of any importance has its own bookseller, who in addition to books, usually keeps stationery, and generally an assortment of fancy articles. In England the principal sellers of cheap publications are those who have stalls at railway stations. They use every means to attract notice to their wares and meet with immense success.

The peripatetic bookseller, on the other hand, does not rely on neighborhoods or local patronage. The world is his market, and he goes out into it to find his customers. He persuades men who never dreamed of owning a book to make an investment; he insinuates himself into workshops in the face of "No admittance;" penetrates into kitchens and invades the parlor. A man of the world, he is always polite; and if hustled into the street, thanks his persecutor.

This class of men are the standard bearers of literature even to the frontiers of civilization, and some of the ablest men of our day have sprung from their ranks. It is a business, however, in which the field is vast and the laborers are comparatively few. Hundreds of intelligent young men who are now jumping counters at the beck of their masters, receiving more kicks than pay, or who are fretting their hearts away in dark offices waiting for professional patronage, could in this pursuit realize a handsome independence in a few years.

It may be proper here to say a word on the mistaken notion that travelling agents interfere with local booksellers. Pedlars who purchase cheap editions of standard works in the cities and auction them out in the country towns, are undoubtedly an injury to the whole trade, but those who introduce new works at publisher's prices—and this is the class of which we speak—are the most efficient coadjutors of the local bookseller as well as of the author and publisher. They call the attention of numbers to the work who do not buy from them—they sow the seed from which the bookseller reaps the benefits. Understanding this, the most enlightened of the New England States have repealed the laws which they had before passed interfering with the operations of book agents, and in all, excepting the state in which they imprison women for teaching children to read, they are a dead letter.

But we must hasten to a conclusion. A revolution is now going on in the circulation of successful works that surpasses all anticipations, and America stands at the head of it. In early days five hundred was a large edition of a new book; from 1827 to 1837 the ordinary sale of a successful book was from one thousand to one thousand five hundred copies; now one thousand five hundred of almost any book can be disposed of, and it is not unusual to print ten thousand as a first edition, while the sale of a few works is entirely unprecedented. The circulation of Irving's works has amounted to hundreds of thousands. The sale of "Uncle Tom" is set down at 295,000; of Prescott's works at 160,000; of Freedley's Treatise on Business, (in England and America,) at 108,000; of Leslie's Cookery at 96,000; of Fern Leaves at 45,000, and so on. In England, the books which have the largest circulation are by American authors. But the revolution now in progress, is not confined to the circulation of books, but extends to their character. Good men need no longer mourn at the popularity of trashy, baneful literature, and at the neglect of the good. A nobler, healthier tone now characterizes the public taste. Fiction is in demand, but it is fiction of a high order, conveying wholesome truths. Religious works in many cases meet with astonishing success. Poetry that has the ring of the true metal will find purchasers; witness the success of Alexander Smith's Poems, Arnold's works, and Gerald Massey's "Babe Christabel," three editions of which have been sold in four months. In a word, the book trade, though vast in its extent and wonderful in the rapidity of its growth, is yet in its infancy. We look forward to the time when the readers of useful high toned books, full of "thoughts that breathe and words that burn," will be counted not by hundreds of thousands but by millions. God speed the day.

CHAPTER III.

CARRIAGES AND THEIR MANUFACTURE.

A carriage may be defined to be any wheeled vehicle designed for convenience or pleasure in travelling. It is a general term for all those vehicles used in the conveyance or for the accommodation of persons, in contradistinction to those which are employed in the conveyance of things; hence the word is appropriately applied to a coach, but carts or wagons are never called carriages. In common with the progress made in other departments of the arts and trades, the manufacture of carriages has become an important one, employing considerable capital, affording subsistence to a large number of persons, and as the fashions are subject to frequent change, calling into exercise on the part of leading manufacturers a high order of skill and invention.

Antiquity of Carriages.—The carriage, as an appendage of royalty, is of such remote antiquity, that "who was the first coachmaker," has long been a vexed question among the learned. A writer in Frazer's Magazine, learnedly and amusingly discusses the subject, but after demolishing all previous theories, he arrives at the not very satisfactory conclusion, that "Phœbus Apollo (the sun) alone can with truth be said to merit the honor due to the originator of so useful a species of locomotive machine." Whoever may be the inventor, we at least know that so early as the time of Moses, chariots, (which are carriages of peculiar construction,) were in use, for when Pharoah went to punish the children of Israel, "he took six hundred chariots, and all the chariots of Egypt;" and that in the days of Rome's power and glory, a vehicle, ornamented with gold and precious stones, was the usual accompaniment of pomp and magnificence. The long period of barbarism, however, which succeeded the fall of the Roman empire, effaced almost every remnant of this luxury, and the necessities of the times dictated a change of sentiment respecting it. Carriages were no longer patronized by the nobility, nor permitted to their vassals. The feudal lords, with whom military service was a chief consideration, considered it policy to discountenance their use, as tending to make men indolent and effeminate. Hence, even as late as the sixteenth century, "masters and servants, husbands and wives, the clergy and laity, all rode upon horses or mules, and sometimes women and monks upon she-asses, which they found more convenient. The minister rode to court, and the horse without any conductor returned alone to his home, till a servant carried him back to court to fetch his master."

In the early history of England, occasional mention is made of coaches, but it is surmised that the ancient vehicles were merely cars, or a superior sort of wagons. According to Stowe, "in the yeere 1564, Guylliam Boonen, a Dutchman, became the queene's coachman, and was the first that brought the use of coaches into England. And after a while divers great ladies, with as great jealousie of the queene's displeasure, made them coaches, and rid in them up and downe the countries, to the great admiration of all the beholders; but then by little and little they grew usual among the nobilitie, and others of sort, and within twentie yeeres became a great trade of coach making." The fashion gained a permanent footing, notwithstanding the opposition of watermen and chairmen, and the vituperation of Taylor, the "water poet," who reviled the new fashioned coach as a "great hypocrite, for it hath a cover for knavery and curtains to vaile and shadow any wickedness. Besides, like a perpetual cheater, it wears two bootes and no spurs, sometime having two pair of legs to one boot, and oftentimes (against nature) it makes faire ladies wear the boote; and if you note, they are carried back to back, like people surprised by pyrats, to be tyed in that miserable manner and thrown overboard into the sea. Moreover it makes people imitate sea-crabs, in being drawn sideway as they are when they sit in the boot of the coach; and it is a dangerous kinde of carriage for the commonwealth, if it be considered."

Different kinds of Carriages.—The change of fashions to which we have adverted, is not limited to the form or ornament of carriages designed for pleasure or convenience, but also extends to their names. The old terms, Dennet, Berlin, Tilbury, Stanhope, are now rarely or never heard. The principal kinds now in use are called the *Coach*, which may be described as a covered box suspended on leathers, or elliptical springs; the *Chariot*, which is a half coach, that has only one seat with a stool at most before. When these are very gay, richly garnished, and have five windows, they are called *Caleches*. A Chariot, whose head enfolds back, is called a *Laudaulet;* and those which have only a head and no windows, with a leather apron rising from the footboard to the waist, is a *Phæton*, or Buggy. A *Barouche* is an open summer carriage of the lightest construction. All of these run upon four wheels. Of the two-wheeled carriages, we have the Curricle, the Chaise, the Gig, and the Sulky. A *Curricle* is drawn by two horses, each bearing on a narrow saddle the end of a sliding bar or yoke that upholds the central pole. A *Chaise*, or Gig, is a two-wheeled carriage, drawn by one horse, and may be open or covered. A *Sulky* is an open vehicle of light construction, drawn by one horse, and designed for *one person.*

Of *Public Carriages* the principal kinds in use in England and the United States, are the *Hackney Coach*, which is generally an old private coach sold to the proprietor, who hires it out; the *Stage Coach*, the *Omnibus*, and the *Cab.* The latter, which is sometimes called a Cabriolet, has undergone many curious changes. They were first hooded chaises, in which the driver sat on the same seat with the person who had hired the cab. Then came an alteration by which two persons could be accommodated; the driver having a little seat fitted up for him at the right hand of the body of the vehicle. Next came the boxed-up vehicle, which presented the appearance of a slice off an omnibus; it was on two wheels, with a door at the back. After a few minor changes, the four-wheeled cab presented itself, and has ever since remained the type of the class generally; it is well built and will contain four persons. Lastly came the dashing *Hansom* patent; a two-wheeled carriage, very low, opening in the front, having a seat for the driver behind the top, and having large wheels, which enable it to rattle on at great speed.

In France, the Diligences which were, and those which still exist, are clumsy carriages generally, consisting of three bodies, and are drawn by five or six horses, usually driven by one postilion from his saddle. The first body, called the "coupe," formed like a chariot, will contain three people; the second, which is like a coach, the "interieur," will hold six persons; the third, which is similar to a coach turned sidewise, carries six or eight passengers, and is called the "rotonde." In addition to these, there is on the roof before the place appropriated to the luggage, the "banquette," a bench sometimes furnished with a hood, for the accommodation of four passengers.

Mode of Construction.—Carriage making is one of the most highly skilled departments of manufactures, requiring the workmen in many of its branches to possess a practical knowledge of complicated geometrical forms, and a very accurate hand and eye. All the different parts of a carriage, however, are never made by one class of workmen, or in one establishment. The person who is known in the trade by the name of carriage or coach builder, is the one who fits and adjusts the variety of articles that other branches produce, and he usually makes the wood-work or frame of the carriage.

When a coach is ordered upon a particular construction, the coachmaker produces a rough draft of the alterations or improvements, which is put into the hands of the coach pattern drawer, who reduces every part to a scale, and produces a neat finished drawing of the front, side, section and back view of the carriage; this is submitted to the inspection of the party for whom the carriage is to be made, and if no alteration is required, the coachmaker proceeds to build the carriage according to the drawing. A rough drawing of the several parts on a large scale is next made, and the workman from this forms the patterns by which he saws the wood for every part of the body of the carriage. The principal varieties of wood employed by the coachbuilder are ash and mahogany. Ash is used very largely; the quality called "hedgerow" ash, is a tough fibrous wood, with which the principal parts of the frame-work of a coach are constructed, as it is not liable to warp or twist. Beech is a cheap kind of wood, never used by builders of the best carriages. Elm is employed for planking those parts of the body of a coach requiring much strength, as also for the naves of the wheels. Oak in similar manner is employed where strength and durability are required. Mahogany furnishes the material for the panels of the best coaches; those broad, smooth and delicately curved surfaces which form the most conspicuous part of the body of a carriage. Spanish mahogany, which the cabinet maker selects as the most beautiful for his purposes, is not so useful to the coach builder as the Honduras, on account of the unfitness of its curled and twisted grain to conform to the bending which coach panels receive.

It would be quite impossible, and if possible wholly uninteresting, to enumerate all the various pieces of wood which constitute the framework of a carriage, or describe the processes of making them; suffice it to say that the work requires all the accuracy, strength, and neatness of a joiner; the materials and tools being nearly the same. When the body is formed, the top and upper part of the sides are covered with leather prepared expressly for this purpose; the top of the coach being covered with one piece of a large size and sound quality, fastened at the edges. The lower panels, which are of wood, are painted three or four times with common oil color till the pores of the wood are entirely filled up, this is termed "priming;" when this is dry, a body of color, formed of white lead and yellow ochre, is laid on at several different times, being suffered to harden between each application; and when the whole is quite dry it is rubbed to a perfectly smooth surface with pumice stone and water, after which the selected colors are applied to those parts which are not customarily black, while black paint is laid on the parts just mentioned. Then the ornaments are emblazoned upon it, and after being well varnished and polished, the body of the coach, so far as the exterior is concerned, may be called finished. The inside of the coach has now to be lined; the upper part, sides and cushions, after being brought to a level surface by wadding and canvass, with cloth or silk; the elbows and part where the back leans against, with morocco; the holder and trimming with an article called coach-lace, made expressly for this purpose.

While the body of the coach is thus in process of formation, the other parts are being made by other sets of workmen; the "carriage-makers," as they are called, are employed on the complicated mechanism beneath the body; the smiths are preparing the numerous pieces of iron required in various parts of the coach; and the wheelwrights are making the wheels. We shall proceed to define, without attempting to describe minutely the processes of manufacture, the essential parts composing the *wheel*, the *axle*, and the *springs*.

1. *Wheels.*—A coach-wheel is a remarkable instance of lightness combined with strength, requiring considerable accuracy of hand and eye in its construction. As a matter of principle a large flat circular piece of wood with a hole in the centre would form a wheel; and in many countries, forms the only kind in use at the present day; but practice shows that a much smaller quantity of material is capable of being wrought into a wheel, excelling, not only in elegance but in durability, such rude productions. The essential parts of a modern wheel are the *nave*, the *spokes*, and the *felloes*, corresponding to the centre, the radii, and the circumference of a circle. The *nave* is a short block of wood, usually elm, forming the middle of the wheel, and pierced with a hole to receive the axle or axle-tree. The *spokes* are bars of oak radiating from the nave at equal distances one from another, and extending to equal distances from the *nave.* They are brought to the factory in lengths of about four feet, and are then shaped by hand to the light and elegant forms with which we are familiar. The length of the spokes must of course depend on the diameter of the wheel. The front-wheels of a modern coach are from forty to forty-four inches in diameter; and the hind-wheels from fifty to fifty-six inches. The front-wheels have usually twelve spokes and the hind-wheels fourteen. The *felloes* are circular segments of ash, framed on the extremities of the spokes and joined one to another so as to form a circle. To these parts must be added the *tire*, an iron hoop that binds all the felloes together. The diameter of the tire is such that it would not fit on the wheel while cold, but being expanded by heat it encompasses the wheel, and gradually

clings tightly to it as it gets cold. To aid in this two men beat the tire with powerful hammers, while two others cool the iron by sprinkling it with water. Iron pins are subsequently driven through the tire and felloes, one on each side of every joint, the points being securely riveted inside the felloes. Some bunglers, however, forget this part of their duty, and then the gentleman driver will be likely to have an opportunity of testing the strength of wheels without tire.

II. *The Axle.*—This is a piece of wood or iron which serves as a centre for the motion of wheels. It was formerly made wholly of wood and then generally termed an axle-tree; but now that metal is frequently used instead of wood, the word "axle" is more frequently used alone. Axles used formerly to be fixed firmly in the wheels and to revolve beneath the vehicle; but now they are so made that each wheel revolves separately on them. The axle consists of three parts: the two *arms* which pass into the naves of the wheels; and the bed or central part which connects the two arms together. At first a hoop or ring was put within the hollow of the nave to prevent the too rapid wear of the wood by the friction of the axle; but now the nave is lined with an accurately-fitted iron box capable of not only receiving the axle with little friction, but also of containing a reservoir of lubricating oil.

III. *Springs.*—The springs form another and very important part of the metal work of a coach, and require a brief notice. The object of a spring, whatever be the substance of which it is formed, is by its elastic action between the wheels and the body of the coach to diminish the concussion and irregular motion occasioned by the passage of the wheels over uneven ground. Leather might be used with a slightly elastic effect; wood is sometimes used in light one-horse vehicles; but iron or steel is the universal material for the springs of modern coaches, and is used in the form of elastic plates. The forms given to these steel springs are exceedingly varied, and contribute not a little to the general elegance of a carriage. The earliest springs were formed of a single plate of steel; but in modern manufacture several plates are laid one on another, all bound in close contact, and yet free to bend independently of each other, by having the ends loose. The steel employed is prepared expressly for the purpose, and is brought by the rolling-mill to the thickness of about a quarter to three-eighths of an inch, and from one and a half to three inches wide. A compound spring, formed of several plates, is hooped or bound together with an iron hoop shrunk on hot and riveted. If it be a curved spring, the external plate is of course longer than the others, and is formed of thicker steel. All the plates are formed in a similar way. A piece of steel is cut to the required length, tapered and prepared at each end, and one or both surfaces are then "middled," that is, slightly hollowed by hammering. Near each end a slit is made about an inch long, in which a small rivet-head, attached to the next adjoining plate, may work. When four or more of such plates are combined, and hooped tightly in the centre, the ends are free to yield when any pressure is felt, and thus the pressure becomes equally shared by all.

As to the technical distinctions of the "single elbow spring," the "double elbow spring," the "under spring," the "nut cracker spring," the "C spring," the "S spring," and many others, we need merely remark that they are various forms adapted for different kinds of carriages, some for the coach, some for the phæton, cab, &c., but all are produced by similar trains of operation.

Felton, in his work on the art of coach building, has entered at great length upon the construction of various sorts of carriages, and the coach builder requiring information upon this part of his business, would do well to study that author's work. He observes, "that it should be well proportioned, according to the weight it is meant to support, always allowing rather an over than an under proportion to avoid the risk of accidents. Proper application of iron-work, to support the pressure, is a thing materially to be attended to, and great care should be taken that there are no flaws in it. The timbers, which are of ash, should be of young trees of the strongest kind, free from knots, and perfectly seasoned before they are used; and as many parts of the framing are obliged to be carved, it is best to select such timbers as are grown as nearly as possible to the shape required. The workmanship must be strong and firm, and not partially strained in any of its parts, as it is liable to much racking in its use. The timbers throughout are much lessened or reduced for the sake of external appearance, which appearance is assisted also with mouldings, edgings and carvings."

Points of a good Carriage.—Carriages of all kinds should be adapted to the work they have to perform. The demands of locality and the appropriation to different purposes, necessarily create considerable diversity, but everywhere the man that can produce a carriage that is elegant in appearance, and at the same time has the requisite strength, is acknowledged to be the best coach builder. Confining ourselves to general principles, we shall state only those points which good judges consider the essential properties of the best vehicles now in use.

1. They consider ease of draught as indispensable. For this purpose the forewheels of a carriage should always be sufficiently large to bring the centre of the axle to an angle of about fifteen degrees with that part of the haime or collar frame on which the trace fixes; that being ascertained to be the best relative position between the animal and what he has to draw at.

2. They look to proximity of rotation, that is, the place where the wheel touches the ground, and its relation to a perpendicular draft from the croup of the horse, as being an essential matter, for the draft will assuredly be more oppressive in proportion as the point of rotation is removed. Hence, long shafts, great space between the fore and hind wheels, and all the representatives of those early errors, should be abolished.

3. They judge the size of the wheels, that is the length of the lever by which they are moved around their axis, to be of the greatest moment.

4. Where the road is firm, they hold it expedient to reduce the bearing point, viz., the edge of the wheel, into as small a diameter as may be found capable of sustaining the incumbent pressure. Where the roads are soft or quaggy, they deem the broad tire to be preferable; both because it bears up the load and allows of less sinking, whereby considerable opposition would be created, and that such a construction is more favorable to the track in which the carriage may have often to travel.

5. The axis of every wheel ought to move with as little friction as possible; this may be effected by making the spindle as small and as short as circumstances may allow, taking care to lubricate the connecting parts well so as not to allow of the smallest tendency to adhesion. Wheels intended for travelling over uneven surfaces should be *dished* so that the spokes may successively be upright whenever they come under the axle. The bend of each end of the axle downwards is a convenience and contributes to the foregoing effect while it causes the upper parts of the wheels to diverge, and gives more scope for the body of the machine, though it contracts the space between the points of rotation and renders the machine more liable to overturn. A carriage or loaded wagon must overset whenever a line drawn perpendicular to the horizon and touching the corner of a square load touches the ground on the outside of the tire of the opposite wheel, for the line of gravity then becomes exterior to the support, and *vice versa.*

6. All four-wheeled carriages should have their hind and fore wheels roll in the same track. The ordinary width of the wheels is four feet eight or ten inches: that of wagons and carts generally measures up-

wards of five feet, to which chaise wheels intended for the country must be adapted.

Leading Manufacturers.—In the United States the manufacture of carriages has largely increased within the last few years, and is now an important pursuit. With respect to the number of principals engaged in the manufacture or the amount of capital invested in it, we have no reliable data, though the census of 1850 states the number of coach builders at fourteen thousand and forty-nine, of which it assigns four thousand two hundred and sixty-two to New York, one thousand one hundred and eighty-five to Pennsylvania, and one thousand one hundred and forty to Ohio, no other state having a thousand. In the art of combining lightness, beauty and strength in the manufacture of carriages, it is generally acknowledged that our countrymen have succeeded better than any other nation; and they have been greatly aided in attaining this superiority by the unrivalled excellence of the hickory furnished by our forests. Philadelphia has long been a point celebrated for its manufacture of carriages. A Gazelle Wagon, made by G. W. Watson of that city, received the prize medal at the World's Fair in London, and orders for carriages are constantly being received by the leading manufacturers, from the chief cities and capitals of Europe. Among those who have been most highly favored in this respect, and, as we think, deservedly so, is William D. Rogers, formerly of Sixth and Brown streets, now established at the corner of Sixth and Master streets, Philadelphia. His carriages combine, in an eminent degree, the essential qualities of lightness and strength, while in point of beauty and finish, his *chefs d'œuvre*, cannot, we think, be excelled by the most celebrated manufacturers in the world. One of the most splendid buggies we have ever seen was made by him on an order from Paris.

Mr. Rogers has the advantage of being himself a practical coach builder, and thoroughly understanding the art. He commenced business in Philadelphia, some seven years ago, with only seven men, but by skill, perseverance and energy, he has increased his business so as to afford constant employment for over one hundred men, while his name as a manufacturer is as familiarly known in the southern and western portions of our country, as in his own immediate neighborhood. His extensive manufactory, constructed on the most approved principles, combining economy of space, convenience and safety, is well worthy of a visit by those who delight in viewing the operations of industry directed by intelligence and skill.

In New York, Bridgeport, New Haven, Conn., and Newark, N. J., there are large manufactories; and in Baltimore, Messrs. MULLMEYER & HUNTER, 45 Holiday street, and JOHN CURTLETT & SON, North street, have an excellent reputation.

Before closing this article, it may be proper to say a word on a distinct, though kindred branch of manufacture—that of *Omnibuses*. These useful vehicles, though so familiar to denizens of cities as to create a desire in restless minds to supersede them, are of comparatively recent introduction in the United States. They were first used in Paris, and were not known in this country until 1830, when Gilling, a Frenchman, came to New York, having a drawing of such as were then in use in the French capital. One was built in that year under his direction by a coach maker in New York, and another by Messrs. Carter, of Newark, N. J., by whom Gilling was employed. The appearance of the first Omnibus, run upon Broadway, by Brower, a stage proprietor, attracted much attention. The word "Omnibus" was painted in large letters on both sides, and the majority being unacquainted with its meaning, (though experience has proved its appropriateness, as they do convey all things, as well as all persons,) pronounced it variously, supposing it to be the name of its owner. This was but four and a half feet in width, had elliptical springs, swelled slightly at the sides, but not so gracefully as at present. Gradual improvements were made, platform springs used, until the clumsy vehicle for the transportation of city travellers in former years attained to its present elegance and comfort.

We probably cannot better illustrate the extent and nature of the business, than by a sketch of the first and most extensive manufacturer of Omnibuses in the United States, whose name is familiar to all who have frequently availed themselves of this mode of conveyance.

JOHN STEPHENSON, 47 E. 27th street, NEW YORK, now the leading manufacturer in the United States, was, in 1830, a journeyman in a shop where the first Omnibus was made. In 1831 he commenced business as a carriage builder in Broadway, opposite Bond street, and the first order he received was one for an Omnibus, this being the second made in New York. One journeyman body maker, one apprentice, one trimmer, besides two painters partially employed, composed his entire force at this time. In 1832, his shop and the adjoining property were destroyed by fire, which caused a removal. This seeming disaster resulted to his advantage, for he recommenced business under more favorable circumstances. More room being required for his increasing business, in 1843 he removed to his present locality in 27th street, near 4th avenue, where the buildings were enlarged, and added to, from time to time, until his establishment was brought to its present capacity. For some years past, he has confined his business solely to the manufacture of Omnibuses, which have become so celebrated, that he not only supplies New York, but Philadelphia, Boston, Cincinnati, New Orleans, St. Louis, Chicago, and various smaller cities and towns, and frequently receives orders from San Francisco, Havana, and Bogota. He has now two hundred men in his employ, and makes annually about three hundred Omnibuses. It is worthy of remark, that the one trimmer who commenced with Mr. S., is yet in his employ, also the first apprentice, who is foreman of the wheel shop. Twenty-three years' connection between employer and employed, is a strong recommendation of both.

A steam engine of fine workmanship blows the forge fires and propels all the machinery employed in the various operations. All parts of the carriage are made on the premises, including the axles and springs. The wooden parts are cut, planed, sawed, or shaped by machinery, perfectly adapted to the purposes designed. The most complete system is introduced throughout the establishment, each man having a particular work assigned him, in the excellence of which he has an interest, and feels a pride. In many cases, such as the fitting of the axle and the testing the springs, the initial of the workman is attached to the article, which tends to fix a responsibility that induces increased carefulness. Springs and axles are submitted to a severe test before being used, and consequently accidents rarely occur from defects. The clevis or shackles which connect the swingletree with the carriage are made of steel; and those parts upon which the greatest strain comes have increased strength. A machine for boring the hub of the wheel and inserting the boxes, struck us as being novel and of great advantage. Tires for the wheels are one inch in thickness, and so great is the travel in Broadway, that in four months these will be worn out.

Great attention is paid to decorating omnibuses, and artists are frequently employed who would win fame in the higher departments of the art. Well seasoned timber is an indispensable requisite in the construction of durable carriages. Mr. S. obtains his oak from isolated trees found in pastures, which is said to possess greater strength than that taken from forests. It is seasoned for a year, then cut or sawed into shape, and stowed away one or two years' longer. A stock sufficient for two and a half years' use is constantly kept on hand.

A practical knowledge of the business, and an experience of twenty-three years, with great opportunities for observation, have enabled Mr. Stephenson to introduce many important improvements in the manufacture of Omnibuses, especially with a view to increase their strength without increasing their weight. His great success and extended fame may justly be reckoned among the triumphs of mechanical genius in this country, and his history is a verification of the Hungarian's motto:—

"THERE IS NO DIFFICULTY TO HIM WHO WILLS."

CHAPTER IV.

CLOTHING AND THE CLOTHING TRADE.

The history of man's garments would of itself occupy a large volume, and therefore we can only glance at some of the most important points and changes connected with the subject. Few at the present day care to think of the time when men were clothed in the skins of wild animals, or take time to admire the ingenuity and taste employed in the production of the articles of their dress. Because garments are common, we are apt to regard them as *natural*, as if they grew and were not made, arriving at their present perfection at one spring, instead of being the slow growth of not only centuries, but thousands of years. We, however, deem the task of tracing the gradual rise and change in the form and fabric of man's clothing as one both of interest and instruction.

History and antiquity of Clothing.—It seems almost superfluous to state that the first mention on record of an article of dress worn by a human being, is found in Genesis, c. iii. v. 7, where we are told that after the woman and man "had eaten of the forbidden tree, the eyes of them both were opened, and they knew they were naked, and they *sewed fig leaves together* and made themselves aprons." Milton says :—

"Those leaves
They gathered broad as Amazonian targe,
And with what skill they had, together sewed
To gird their waist."

It will be observed that they "sewed fig leaves" to each other; hence we have not only the first known allusion to clothing, but the first intimation of manufacture. Our first parents did not take a simple leaf to hide their nakedness, as careless readers often assert, but they secured several together, and thus performed the first human labor, that of manufacturing, and both worked at tailoring. In the 21st verse of the same chapter of *Genesis*, we are informed that God made coats of skins and clothed Adam and his wife in them. From this it is natural to conclude that the apparel of the early tribes of men was composed of the skins of animals, nor do we read of any *woven* fabrics until the time of Noah, when reference is made to garments in language which leaves the mind impressed with the idea that they were of a manufactured substance.

Owing to the absence of the pictorial art among the early Jews, we are without any reliable representations of the costume of that people. What illustrations we have are mainly drawn from fancy, or more properly represent the Jewish costume at an age of the world when Egypt began to leave her impression upon the habits and customs of man. Therefore, at this period, profane history throws considerable light on man's progress in the arts of civilized life, and we are enabled to abandon the vague and unsatisfactory references to clothing made by sacred writers, for the more explicit statements and circumstantial details of secular historians, whether recorded on papyrus or impressed on the more endurable substance, *stone.*

Eastern Costume.—Flowing robes are perculiar to all, or nearly all Eastern nations. The Turks, Arabs, Hindoos, Chinese and Japanese, have adhered for centuries to loose garments. Their style of dress differs in some respects according to the nation, but the great fact that the apparel of all these is loose and free, is too well established to be refuted. Fashion has but few votaries in those lands, so far as dress is concerned.

This marked peculiarity characterizes the costume of nearly all ancient nations, as the representations left us amply testify. The Romans and Greeks did not wear pantaloons, and Demosthenes or Cicero would greatly degenerate were we to clothe them in doublets and hose. Trousers were an article of dress in the "palmy days of Rome" by which the barbaric nations of that time were distinguished from the citizens of the mighty empire. At that period, both the Gauls and Britons wore the tunic, and over that a short cloak, called a *sagum* by the Romans, from the Celtic *saic,* which, according to Varro, signified a skin or hide.

It is well to take the history of dress in England, to illustrate the improvements in modern clothing, for the simple reason that nearly all fashions have been in vogue among that people.

English Costume.—The ancient Britons, when Cæsar and other Romans visited the island, wore skins in cold and went nearly naked in more favorable weather. Caractacus, when carried prisoner before the Emperor Claudius Cæsar, was for the most part nude, having an iron chain around his neck and a second around his middle, and as he was a monarch, we may reasonably presume that the costume of his subjects was exceedingly meagre. Boadicea, who is a conspicious character in early history, is described by the Romans as wearing a loose robe, of changeable colors, over a thick plaited kirtle. This dress was improved on under Agricola; the Britons adopting, in a great measure, the Roman fashions.

The ancient Saxons, according to Tacitus, wore the *sagum*, before referred to, clasped before, or, for want of a clasp, fastened with a thorn. This was the only garment of the common people. The rich wore a slight dress, showing the just proportions of the body. The costume of the women was composed of linen robes, interlaced, and trimmed with purple, without sleeves, their arms bare, and their bosoms uncovered.

The Anglo Saxons were the first inhabitants of England to adopt close fitting coats. In their time the dress of kings and nobles was often trimmed with gold; ornamental extravagance in dress thus making its advent among them. Both men and women wore shoes. The legs of the men were covered with a bandage or stocking reaching above the knee. The shoe worn at this period does not differ essentially from that of the present day, and we may remark here, that this article of dress has passed through fewer changes than any other. One of the most absurd it ever assumed was in France, about the year 1060, when the Earl of Anjou introduced shoes with peaks full half a yard long, on account of a defect in his feet. The fashion, like many equally ridiculous since, gained favor, though so inconvenient that if a man were unhorsed in battle, he became an easy prey, as he could neither walk nor stand.

In the Danish period of English history, the girdle was a favorite part of the female dress, and has been since often revived. The Normans and Flemings, who accompanied the Conqueror into England, were remarkable for their ostentation and love of finery. Personal decoration was their chief study, and new fashions were continually introduced. Indeed, they seem to have been the fashion makers of their time, as the Parisian *artistes* are reputed to be of ours.

From this period forward, sculpture, painting and engraving furnish very accurate records of the various changes in dress, but we have not space to follow them. The armor of the Crusaders was a poetical vesture, and no doubt suggested the more general use of tight garbs. For a time such were adopted, and different articles of dress, indispensable to us moderns, such as the shirt and vest or waistcoat, came into use.

In Edward the Third's reign, extravagance in apparel was a sore grievance to some. Parliament passed a curious law on the subject. Ermine was denied to all except the royal family, and rings, buckles, girdles, and ribands, were all forbidden to one who ranked lower than a knight. Caps of several shapes were worn in this reign, and it is about this time that beaver hats are first spoken of. They were of Flanders manufacture, but were not shaped like those of the present day, as that stupid disfigurement is a modern insanity.

There was no material change in style until the time of Henry VIII., when something approaching to the present garments became general. In Cromwell's day this was further advanced, and partook strongly of the sour character of the times. In the reign of Charles II. a thorough revolution pervaded all customs, and the style of dress, particularly that of the females, was as graceful and as loose as their morals. The costume of the gentle sex, as given in the pictures of Lely and Kneller, was truly natural and elegant, at once imparting beauty and attraction to the form. The stiff stomacher, the horrible ruff, and the more savage farthingale, were repudiated by nearly all. The ruff, by the way, illustrates the trifling origin of many strange things in dress. It was invented, in the time of Edward VI., by a Spanish or Italian lady of quality, to hide a wen on her neck. The cravat has a similar history. It was first worn by some royal gentleman to conceal the ulcerous effects of the scrofula in the throat.

Fashions.—Fashion often proceeds from a desire to increase personal attraction, but still more frequently from mere caprice or design on the part of professional modistes for gain and trade. That health, ease, grace and natural motion are often sacrificed to it, needs no elucidation, and it is a curious fact that men who revolt at dictation from all other sources, obey fashion, and submit to torture because their tailor cuts their coat in the *mode*. The only country in the world which does not yield implicit obedience to this tyrant's sway is Spain. Paris does not prescribe the style of dress for Madrid, but in this republican country we loyally acknowledge her supremacy.

In every age there is generally one or more persons who may be styled the impersonation of fashion, and the monarch of dress. Among those of this class most celebrated, we might refer to Beau Brummell, whose influence in controlling trade was so great, that his patronage was a tailor's fortune. He was the patron of Schweitzer & Davidson of Cork street, who not only supplied his clothing gratuitously, but are said to have furnished him with pocket money, when his fortunes were on the wane, by delicately inserting in the vest pocket a hundred pound note on sending a suit home. Beau Nash, his illustrious prototype, was another arbiter of fashion; both were constantly in debt, and both died in extreme poverty, wanting the necessaries of life. These were samples of their class—the dandies—a class, however, which has never been held in high estimation by intellectual men. Among races, the one in which a love of gay dress and tawdry finery may be most extensively observed, is the Negro. Savage or civilized, they always affect gay colors, and are the natural dandies of the human species.

The fashions of the United States are admitted to be generally derived from France, although it is evident that many of them, and those the best, are of our own invention. The plates published in New York and Philadelphia, are valuable to the fashion arbiters of Paris, who use their hints without giving credit. Change in dress is effected quickly with us, and some striking alterations have taken place in our coats and pantaloons during the past twenty years. About 1824, it was customary to wear coat collars large enough for a horse, and not very unlike a horse collar, as portraits of men taken at that day will show. This was reformed in 1830, and now the most elegant of such garments the world produces, as regards shape, fit or collar, are those of American manufacture.

Ready Made Clothing. Within the last quarter of a century a most important and complete revolution has been effected in the ancient and respectable occupation of tailoring, as well as in a branch of the Dry Goods Trade, by the introduction of ready made clothing. Some twenty-five years ago the only clothing kept for sale was that which is known as "slop clothing," for seamen. But the inconvenience attending delays and misfits on the part of tailors—the advantages of procuring a wardrobe at a moment's notice—the ability of merchants to manufacture and supply clothing equally as good, but much cheaper at wholesale than to order—have led to the establishment and encouragement of a distinct branch of business, which may now be fairly classed as a leading pursuit. In 1835 the wholesale manufacture of clothing in the United States was first entered into to a considerable extent, principally in the city of New York; but many of those who then engaged in it were prostrated by the commercial disasters of '37. In 1840 the trade was re-established and increased, and since then has continued to enlarge and increase, until its present extent exceeds ordinary belief. The amount of clothing sold at wholesale in New York city in 1841 was $2,500,000, while in 1853 it nearly reached the enormous amount of $20,000,000. The sales for the present year (1854) will however be much less, not because the goods cannot be sold, but because prudent men think they discern in the times some signs that warn them to be cautious in extending credits. In Cincinnati something like a proportionate increase has been shown. In 1840 the value of ready made clothing manufactured there was set down at $1,940,450, while in 1850 it was $4,427,500, being an increase of 130 per cent in ten years.

The revolution effected by the popularity of ready-made clothing has not been confined to the large cities. It has extended to all sections of the country, limiting the country merchants' sale of piece goods for men and boys' wear, and compelling tailors, in some instances, to abandon their trade, and embark in the business themselves, or seek other employments. Wherever it has been introduced, it has met with singular success and popularity. Country merchants, who have been careful in the selection of sizes and styles, have found that the sale of clothing can be effected with less trouble than piece goods, and without the serious drawback of remnants—that there is less competition—that their daily receipts of cash are thereby increased—and we commend the matter to their attention as a profitable and desirable addition to their stock in trade.

The Clothing Manufacture. The remarkable success of a few persons engaged in the manufacture of clothing has stimulated competition, and excited so much attention, that with a view to afford reliable information to young men in the selection of a business, we have endeavored to investigate the chances of success in this pursuit, at this time. The result of our investigation is, that most of those who have embarked in the clothing trade, both at wholesale and retail, have acquired a competence, while a number have realized fortunes. But the business requires peculiar qualifications, absolutely essential to its success. In a subsequent chapter on the Dry Goods Trade, we will endeavor to enumerate the qualifications of a Dry Goods Jobber; here we may state that the manufacturer of clothing requires all the qualifications, and encounters all the risks of the Dry Goods Jobber, besides requiring a much larger capital, and peculiar skill in the selection and adaptation of styles to the wants of respective localities and customers. As clothing must be made in large quantities in advance of the season for its sale, and as the hands receive their pay in cash on delivery, while the manufactured article is usually sold on long credit, it is obvious that a large capital is necessary to carry on an extensive business. Without practical knowledge and taste, a large quantity of unsaleable goods of less value than the uncut cloth, may be fabricated, and which must be sold at a positive loss. It is a singular fact that practical tailors, however skilful in their trade, and though possessed of the requisite capital and taste, rarely succeed as wholesale manufacturers of clothing. Their previous pursuits and habits have not fitted them, in fact, seem to have unfitted them for a business which requires the manager to take in at a glance the various wants of consumers in the North and the South, the East and the West, the fisherman on the Atlantic, and the miner near the Pacific. To this there are exceptions, of course—such as Longstreet, of New York, whose success we shall presently allude to. But in general it may be stated that the business requires the manufacturer to possess the *united* abilities of the practical tailor, and of the well qualified Dry Goods Jobber, and then success is generally the result. Retail establishments selling principally for cash, of course require less capital, and encounter less risks.

One great benefit resulting to the community from the success of the clothing manufacture, is the immense field of employment it has opened to *females* and *immigrants*. No correct statistics of the number of operatives employed in this manufacture have been published, but we may judge of the number from the fact that the house of Hanford & Brother, New York, alone employ upwards of *two thousand* persons. The male employees are principally German and Irish—few Americans being employed in it, except as cutters. But the poor of the large cities are not the only ones benefitted by this trade. Many manufacturers in Boston and New York have the coarser articles of their stock made at some distance in the country. Boston sends goods cut and trimmed to parts of New Hampshire and Maine, as well as of Massachusetts, to be made up; while New York city sends to the towns in that state, New Jersey, and Connecticut. In these cases agents receive the goods in large quantities, convey them to the country places where they are made, and return them to the manufacturers. The agents are responsible that the work is well done, receive the usual rates from the manufacturers, and in their turn give such prices to the country work people, as will leave themselves a profit. Many females in rural districts thus increase their pocket money, but ought they not to consider whether their profit is not made at the expense of their more needy sisters? Philadelphia clothiers rarely have clothing manufactured out of the city owing to the difficulty of having the work well done, and in New York it is also meeting with disfavor.

To what extent sewing machines are used in the manufacture of clothing we are unable to ascertain. Some of the early machines did not work well, soon got out of order, and thus a prejudice was created against their use, which those of later and more perfect construction have as yet failed to remove.

A wide spread opinion, prejudicial to the respectable clothier, we have taken pains to investigate. It is that it is customary in the trade to pay the work people, especially the females, such prices for their work, as will barely suffice to prevent starvation. Hood's "Song of a Shirt," and other fearful pictures of the overworked, underpaid, and suffering needlewomen are familiar to all, and have excited our sympathies for those who are compelled to "stitch, stitch," for a miserable subsistence. That some of the Chatham street shops, some of the slop clothing shops in Philadelphia and Boston, as well as in New York, do oppress the poor, do afford the lowest possible remuneration for work that will support life, we are compelled to believe. Further, we have been told there are some—for the honor of humanity we trust they are few—who advertise for a large number of women, give each of them a garment to make, and when returned, condemn the work, refusing to pay anything; and again seek for new victims. But upon making minute and particular inquiries as to the remuneration given for female labor by respectable wholesale and retail clothiers in New York and Philadelphia, we are convinced that, notwithstanding the competition in the trade, and the temptation to lower prices by underpaying labor, the females so employed are comparatively well paid. In arriving at this conclusion, we have not been compelled to rely solely on the word of the manufacturers, but an examination of their books was invited. At Mr. Wilde's establishment, New York, we found that women earn from $3 to $7 per week. Those who earn but $3, can only make the coarser articles, or are very inexperienced in the use of the needle,—while others of neatness, industry, and taste, can make from $5 to $7 on fine vests. For a Marseilles summer vest they receive six or seven shillings; and there are some who make eight per week, thus earning from $6 to $7. The average, however, can make about six per week, and consequently their earnings are about $4.50. For making a silk vest 75 cents to $1 is paid. For the commonest pants which are thrown together 31 to 37 cents are paid, and two pair a day is the average product.

The coats and finer kinds of work, except vests, are made during the dull seasons of the year by tailors, who at other times are employed in fashionable shops at higher rates. This ensures good work at cheap rates. The wages earned by these vary from $6 to $10 a week,—but as most of them have families, the earnings of their wives and children always amount to something in addition.

The cutting is a trade in itself and requires talents of a peculiar kind.

In the good clothing warehouses the men employed in this department are all of long experience and undisputed ability.

Leading Clothiers.—Hanford & Brother, Park Row, New York, are reputed to be the most extensive manufacturers of clothing in the United States. The house was established by Mr. Lewis, who removed to New York from Boston, where he had been engaged in the business in 1830. In 1840 he was joined by Mr. S. H. Hanford, and the firm of Lewis & Hanford continued until 1850, when it expired by the death of Mr. Lewis. In that year Mr. H. associated with himself his brother John E. Hanford, and since then the firm has been conducted under its present style of Hanford & Brother.

The multiform operations of this establishment are thoroughly systematized, as they necessarily must be, and proceed with the regularity of clock work. As soon as a piece of cloth has been received into the store, it is carefully examined, and the blemished portions, if any, withdrawn. After this examination, each piece is taken to the superintendent, with a memorandum of the quantity it contains, its cost, of whom purchased, &c., all which is entered in a book; also the number and description of garments to be made; how trimmed; name of cutter, price of making, &c. It is then passed to the cutter, who receives directions as to the kind, style and size of the article to be made, and after being cut, the pieces are handed over to the trimmer, who supplies buttons, thread, lining, &c. The goods are then received by one of the foremen, who gives them out to be sewed and finished, and on their return they are examined by him, and forwarded to the sales department.

Besides the articles of clothing usually made by the trade, Messrs. Hanford & Brother manufacture *shirts* and *oil clothing* to a large extent. Their standing stock of the former, is about six thousand dozen, and the quantity made annually, if stated, would seem almost incredible. The bosoms, collars and wristbands of the shirts are made by machines, chiefly in Westchester co., then sent with the cut pieces to country places, where they are sewed together. Upon their return, they are sent in large quantities to a mammoth laundry in Hoboken, where they are starched and done up. The shirts made here are of every quality and price, from those entirely of muslin, at $6 per dozen, to those with the finest linen bosoms and collars, at $36. *Oil clothing* is made of brown or unbleached cotton drill, cut and made large to allow for shrinking. The articles are made up by those who are unable to make better work, and afford employment to girls and learners both in the city and country. They are then oiled—not immersed in the oil, as we had supposed, it being applied with a brush. This is thrice repeated, and six weeks' time allowed for drying thoroughly, to prevent spontaneous combustion.

In enterprise, extent and liberality the house of Hanford & Brother will compare favorably with any other establishment in the world.

James Wilde, Jr., Park Place, New York, is the successor of C. T. Longstreet, to whom we have before briefly adverted, but whose remarkable success, unaided by favorable circumstances, and whose peculiar talent for this trade, deserve a further notice. In 1844, Mr. Longstreet was a tailor in Syracuse, N. Y., possessed of a limited capital. Ambitious to extend the area of his operations, in 1845 he removed to the city of New York, and engaged in the manufacture of clothing, resolving that as soon as he had accumulated a certain sum, he would retire from the field and abandon the race to others. Relying on his knowledge of human nature to make sales, and trusting solely to his skill in physiognomy, without dependence on mercantile agencies or other sources of information in giving credits, he was accustomed to take what others considered great risks, but the result proved the soundness of his judgment, for in a little over five years he had accumulated a fortune of about $200,000, and true to his resolution, he retired from the business in 1850, to enjoy in his native town the fruits of his labors. In this school, Mr. Wilde, and his present partners, John S. Wilde, Frederick S. Kirtland, Benjamin H. Peirce, and George B. De Forest, were educated.

The immediate successors of Mr. Longstreet, were Wilde, Bates & Taylor. This partnership was dissolved in January 1853, and the business continued, at 64 Nassau street, by Mr. Wilde and his partners, under the style and firm of James Wilde, Jr. In May, 1854, finding "the place too strait for them," they removed to their present spacious warehouse, having a front on Park Place of fifty feet, with a depth of one hundred and fifty-four feet. The first floor occupied by the establishment, contains the counting room and the finer description of goods; the second is devoted to medium priced goods, and also to giving out and receiving work; the third to coarser qualities of goods, while the fourth is divided into two parts, the one used for receiving and preparing the piece goods for the cutters, and the other is the cutting department, in which about twenty cutters are constantly employed.

In all large establishments a regular organization of labor and duties is essential, and it is not overlooked by this house. Mr. Wilde is the buyer, a position for which his long experience as partner in an importing house, as well as in the clothing trade, has eminently qualified him. Mr. Kirtland has charge of the manufacturing department, and as their sales extend to every state in the Union, and almost every territory, to Oregon, West Indies, and Central America, an immense deal of knowledge and tact is required to meet the various wants of different localities. The South requires lighter and finer goods than the West, and California and Oregon different from both. The other partners attend to the sales, assisted by competent salesmen, while the financial affairs and correspondence of the house are conducted by Mr. Gilbert. Each piece of work is paid for in cash when brought in, and the weekly payments to hands amount to about $4000. Their sales of clothing alone, during the past year, (not including shirts, which are not usually made by the trade,) exceeded $600,000, or more than ten times the amount sold by Mr. Longstreet the first year he was in the business. They have a number of men constantly engaged in soliciting orders throughout the country, and those whom they visit can have assurance that the house of James Wilde, Jr., is one of standing and respectability.

Reed, Brothers & Co., 177 and 177½ Market street, Philadelphia, who for a quarter of a century have been prominent as jobbers of dry goods in that city, have within the past few years embarked extensively in the manufacture of clothing, and by enterprise, energy and peculiar qualifications for the pursuit, secured a most liberal patronage, of which we believe them to be eminently worthy. This house, we think, has taken more pains than any other in the trade to make known the advantages of ready made clothing throughout the country, to remove prejudices, and popularize the manufacture, for which they are entitled not only to the thanks of the trade, but of merchants, whose labor they have lessened, and of consumers, whose money they have saved. One of the means they have adopted to relieve the perplexity of country merchants not familiar with the business in selection of styles, is to issue, every season, a "*Merchant and Clothiers' Bulletin of Fashion*," which they forward gratuitously to each patron of their establishment. This is a beautiful lithograph, about two feet in size, containing the latest styles of about twenty-four garments, and also the styles of the season previous, for the convenience of those who do not wish the very latest; each garment being numbered so as to facilitate orders, without the labor of a description or the necessity of a personal visit. A gentleman of reputation in his profession is engaged to arrange and select the designs for the Bulletin. We have been assured that buyers have found this sheet of so much service to them both in effecting their purchases and in making their sales, that it may justly be reckoned among the advantages which this establishment offers to its patrons.

Messrs. Reed, Brothers & Co. have recently connected with their concern, a large Gum Clothing Wareroom, and also a Gentleman's Furnishing Wareroom. They have at this time, probably one of the largest stocks of clothing in the United States, and as each garment has been examined *separately*, by two lynx-eyed inspectors, before its admission into the stock, the excellence of their manufacture may be relied upon. No house understands better the art of a liberal economy.

Alfred Munroe & Co., 441 Broadway, New York, though perhaps less extensively engaged in the manufacture of clothing than the houses already noticed, are distinguished for the personal popularity of the proprietors, and for the peculiar system on which they conduct their business. They have two establishments, one in New York, of which the partners are Alfred Munroe and William D. Abbatt, and another in Magazine street, New Orleans, in which Mr. James Mushaway is associated with the gentlemen just mentioned. The peculiar feature in their mode of conducting business, is that no abatement is made from the labelled price of their articles under any circumstances, and satisfaction is in all cases guaranteed. Every article in their stores has its lowest price marked upon it, and each salesman is instructed to make no variation from the price, under penalty of dismission. A notice to this effect is posted in the store, as also the following:—"We show our goods with pleasure, and do not expect any to purchase who do not think them cheap; at the same time we do not ask the custom of any one who wishes to beat down our established prices. We never take less than what is first asked for our goods." Secondly, a customer dissatisfied with his purchase is at liberty to return it and the money will be refunded. Every workman employed by Messrs. Munroe & Co. is numbered, and this number is marked on the ticket which is attached to the garment he makes. If a garment is found defective in workmanship, the workman who made it is known and discharged. A more fair, just and upright mode of conducting business cannot be easily suggested, and when to this are added a liberal support of the press, and pleasing manners, we need not wonder at the extent of their popularity.

Messrs. Munroe & Co. have embarked extensively in the manufacture of Boys' Clothing, for the best specimens of which they received the prize medal at the Crystal Palace.

Bennett & Co., 182 Market street, Philadelphia, are well known clothiers, who combine a retail with a wholesale trade. This house was established in 1844, by its present proprietors, Joseph M. Bennett and J. C. Umberger, both practical tailors, and thoroughly familiar with every branch of the business. They were the first to attempt in the clothing trade an exclusively cash system, which they have rigidly adhered to, and by their success have proved its practicability. Financial crises, which bring trouble, losses and often ruin to others who buy and sell on credit, are only felt by them remotely, in a diminution of sales, and this disadvantage is more than compensated for by the reduction in price of staple goods, which they purchase also for cash.

Messrs. Bennett & Co. have recently found it necessary to enlarge their facilities to keep pace with an increasing business. They have erected a manufactory which will accommodate five or six hundred operatives, and now "Tower Hall"—a name probably more familiar to most country merchants than Newstead Abbey or Warwick Castle—is to be enlarged by the erection of an extensive building two hundred feet in depth, on the adjoining lot, which these gentlemen have purchased. This spot is consecrated to sacred memories. Here Washington had his residence when "up High street" was fashionable, and "up Chestnut street" vulgar. In this square, now the seat of active trade, but little more than fifty years ago, there was only one building used as a place of business, and no inhabitant would have supposed that the square would ever become a street of trade. May its future be as prosperous as its past has been illustrious.

We come now to consider an establishment that, while it possesses the greater part of the characteristics of the houses already noticed, differs from them in combining within itself all the different departments of the Clothing Trade, and, at the same time, occupies the largest and most elegant store, exclusively devoted to the business, in this or any other country. We refer to the house of D. Devlin & Co., corner of Broadway and Warren streets, New York.

In modern commerce, as a general rule, a complete subdivision of employments is essential to eminent success; but in the clothing trade, we think its different departments and adjuncts, in consequence of their intimate relation, may be carried on by one establishment, through perfect organization, with a mutually beneficial effect. The wholesale stock of such a concern would partake of the fashionable style and character of the articles manufactured for the retail department and to order, and be replenished in part from them; while by averaging the profit on the entire sales, the scale of retail prices could be reduced much below the tailoring standard. Thus customers would save their money in moderate prices, and save their temper by not being obliged, nor solicited to take what did not meet their views. A furnishing department for gentlemen and boys would form a suitable adjunct to the other branches of the concern. The practicability of this plan is, however, no longer a matter of conjecture. Messrs.

Devlin & Co. have attempted it on a larger scale than any others, and proved its feasibility. The senior partner of this house has for many years occupied a prominent position in the trade, and accumulated a fortune. Instead of retiring, however, he has preferred to embark his ample means in the gigantic enterprise of building up a great central wholesale and retail clothing establishment, capable of supplying with expedition all wants and all fancies, even to the minute details of a wardrobe. He has designed to illustrate, practically, that a central location, liberal advertising and heavy expenses, are not incompatible with cheap prices, and that they form but a small per centage on extensive sales. He has aimed to provide an emporium where country merchants can find every variety of styles, and suited to their locality; where the citizen and the stranger; the father and his sons; the merchant and the mechanic; the New Englander and the Southerner; the Quaker, and the dandy, (if he has the wherewithal,) can be furnished with every article of wearing apparel, "on call," to use a broker's term; in short, to combine the wholesale and retail clothing, merchant tailoring and gentlemen's furnishing departments, in one comprehensive establishment, possessed of large means and perfectly organized. If rumor speaks correctly in reporting the aggregate receipts of this house, from all its departments, as larger than that of any other clothing house in New York, the plan gives undoubted proofs of complete success.

The store occupied by Messrs. Devlin & Co. is one of the most beautiful of the many beautiful structures in New York. It is five stories in height, constructed entirely of white marble, and has a frontage of fifty feet on Broadway, and is one hundred and ten feet deep. The retail department is in charge of the junior partner, Mr. Barnum, who, for over twenty years, was chief manager in the large retail concern of Messrs. Brooks & Brothers, of that city, and to him, and to the first class cutters employed, we presume the establishment is indebted for its superiority in cut and workmanship. The number of employees in this establishment, if stated, would appear fabulous. In a word, this house is in the clothing trade what Stewart's is in the dry goods trade.

In our previous remarks, we have referred to gentlemen's furnishing goods as a special department of the clothing trade. This term embraces principally shirts, cravats, handkerchiefs, gloves, &c., and in all large cities there are stores devoted exclusively to the sale of these articles. Among those who have acquired an extended celebrity for excellence, skill and taste in the production or selection of these articles, is that of WINCHESTER & SCOTT, 172 Chestnut street, Philadelphia.

The trade of this firm is not confined to citizens only, as some may imagine, but strangers, who visit the city, find it good policy to take with them a dozen or so of "Winchester & Scott's improved cut" of shirts, and country merchants order liberal supplies, at prices varying from $15 to $27 per dozen, the latter being the price for the best qualities. Shirts entirely of fine linen, sell from $3.50 to $5 a piece. In stitching and preparing the bosoms, collars and wristbands of their shirts, these gentlemen use stitching machines almost exclusively, and they speak of them as not only performing the work with greater rapidity and in a more uniform and durable manner than when executed by hand, but that they relieve females from the most laborious, unhealthy, and least lucrative portions of the labor, while at the same time they are enabled to earn an increased remuneration.

In addition to the houses noticed, we *know* that, in Philadelphia, GANS, LEBERMAN & Co., 16 North Third street, A. T. LANE & Co., 175 Market street, and ARNOLD, NUSBAUM & NIRDLINGER, 70½ North Third street; in New York, BALDWIN, STARR & Co., 23 Park Row, and in Boston, JOHN GOVE & Co., Merchants' Row, are extensive and respectable clothiers.

CHAPTER V.

CLOCKS AND WATCHES.

At no period in the world's history has the value of time been so manifest as now, or the importance of having correct timekeepers so generally and cordially acknowledged. Transactions which would have engaged the attention of our ancestors for weeks, must now be executed in hours. We cook, eat, live, negotiate with an eye on the clock, and when we travel our safety and lives frequently depend on the fact that two watches are at the same moment noting precisely the same time. We might, therefore, be pardoned for regarding a modern timekeeper with more than the Indian's superstitious awe; and certainly we will be pardoned for devoting some pages to its consideration.

I. CLOCKS.

A clock is defined by lexicographers to be a machine consisting of wheels moved by weights or springs, that by a uniform vibration of a pendulum, measures time and its divisions, and indicates the hour by a stroke of a small hammer on a bell. It is supposed to have been so called, because it clicks or clocks, and makes a noise similar to that by which a hen leads her chickens. The origin of machines for measuring time, is so remote and obscure, that all that has been written on the subject is at best conjecture, and the improvements which have been made, of which the result is a regulated clock, were not the invention of one man, but a compound of successive inventions, each worthy of a separate contriver.

Dr. Paley has referred to our modern timekeepers as striking specimens of human ingenuity, but to describe the essential parts of a clock to American readers, would seem a work of supererogation. The subject is one which every "genuine Yankee" is presumed to understand theoretically and practically. The fame of this nation for its skill in the manufacture of clocks has reached the uttermost parts of the earth, and governors of islands, more tangible than that of Sancho Panza's, have hailed the arrival of an American on their shores with delight, because he would mend their clocks. For the benefit of our naturalized and unnaturalized citizens, however, we may state that in an eight day spring clock there are two barrels containing springs, one to give motion to the train of wheels called the going train, and the other to the *striking* train. The first of these springs gives motion to a wheel called the main wheel, which in its turn acts upon several other wheels, the time of rotation of which corresponds with that of the minute and hour hand. The last wheel of this system acts upon two little levers or pallets, which give an alternating motion to the pendulum of the clock. A *fusee*, which is a kind of spiral system of grooves, is fitted to the main wheel, and enables the main wheel to maintain an equable motion during the varying pulling force of the spring. All the above named wheels belong to the *going* train. There is somewhat similar train belonging to the *striking* action; but the teeth of the wheels, instead of being so cut as to facilitate the movement of two index hands, act upon certain pins and levers which move the hammer belonging to the bell; this part of the mechanism is exceedingly beautiful, especially when the clock strikes the quarters.

Once in eight days the clock is "wound up," which consists in coiling up the going spring very tightly in its barrel. In its efforts to uncoil itself the spring forcibly pulls round the main wheel, with which it is placed in connection, and the fusee causes this motion to go on pretty steadily and equably. As the main wheel cannot rotate without moving the train of wheels to which it is connected, all these latter also rotate with a velocity depending on the number of teeth which act on each other. In two of the wheels, these numbers are so regulated that the wheels revolve in one hour and twelve hours, respectively; and the axes of these wheels serve as axes for the minute and hour hands. Meanwhile the second spring gives motion to the second train of wheels, which are so connected with the going wheels as to enable the bell-hammer to be moved at the proper time. One of the many kinds of pendulum, concealed behind or within the clock, is set in motion by one of the wheels, and by its isochronous, or "equal timed" vibrations, tends to give regularity to the movements of the wheels generally.

In the manufacture of clocks, the great point to which American ambition seems to have been directed is *cheapness*. The success of our countrymen in this respect is proverbial. Five dollars is probably more than the average price of a modern clock, and one complete in all its essential parts, and warranted for a year, can now be purchased for a dollar. The first attempt in this direction, was the construction of wooden movements. These, however, have been superseded by the rolled or sheet brass movements, invented by Mr. Joseph Ives, of

Bristol, Connecticut, one of the largest clock manufacturing towns in the world. This town has fourteen factories, employs four hundred and forty hands, uses $334,000 in capital, and produces annually over two hundred thousand finished clocks, besides an immense number of clock movements. New Haven, in that state, has three factories, employs four hundred and five hands, using $258,000 in capital, and producing three hundred and seventy-four thousand clocks. The entire state of Connecticut employs in clock making one thousand two hundred and seventy-nine hands, using a capital of $1,002,000, and produces each year seven hundred and ninety-four thousand clocks. It is presumed that New York city finishes about one-fourth as many clocks as the whole of Connecticut, and that the value of the annual manufacture in the United States approaches $2,000,000, one-fourth of which finds a market in England, for home consumption and shipping.

Much ingenuity has been expended at different times in the production of *novel clocks*, or clocks for special purposes. A kitchen clock has been invented, having a bell to call the attention of the cook at certain prescribed periods. Whether it is to boil an egg or to perform any other kind of cooking, which requires a definite number of minutes, the cook moves an index hand on the face of a dial, and when the allotted time has expired, an alarum, or bell, rings to announce the fact. In the *Watchman's, or Tell-tale Clock*, there are a number of pins projecting around the dial, one for every quarter of an hour, and it is the duty of the watchman on the premises, where such a clock is kept, to go to it every quarter of an hour and push in the proper pin, thereby proving to the inspector next morning, that he was vigilant during the night. Each pin admits of being pushed in during a few minutes only, and if the time be neglected, it will be found sticking out, and will show the exact time when the watchman was negligent.

In 1840, an ingenious clock was made by Ratrenhofer, of Vienna, which showed the time for seventy-three towns in different parts of the world, according to their longitudes. It had a dial plate fourteen inches in diameter, in the centre of which was the dial for Vienna; and around this dial were arranged seventy-two very small dials for the other towns; the Vienna dial or clock was set to work by the descent of a four pound weight, and the other seventy-two dials were moved by wheels connected with the Vienna dial; so that one winding up set the whole in motion. All the seventy-three dials showed different time, according to the longitudes of the towns to which they were respectively adjusted.

Trinity Church, at Hull, England, is believed to have the largest clock in the world, having four dials or faces. Each dial is thirteen feet in diameter, and each pair of hands weighs fifty-six pounds.

One of the most remarkable of the late inventions is that of an *Electric Clock,* which dispenses with all wheel work in the timekeeping part. It runs without weights or springs, and its moving power is a galvanic battery. By means of this electric clock, every room in a large establishment may be furnished with an instrument of simple construction, indicating the precise time, with an accuracy that could not be obtained by independent clocks, without referring to the cost; railway stations may be put into connection with a great central clock, and show uniform time; and by an extension of the idea, one clock or motive power might suffice for an entire city.

The latest American invention is a clock for the Japan and Chinese markets, that measures time as the hours are counted in China and Japan, the hands making a diurnal revolution within twelve Chinese hours. The characters upon the dial plate are Chinese. The inside circle has four characters, showing sunrise, meridian, sunset and midnight. The next circle exhibits the odd and even hours; the even hours are designated by a bold figure, and the odd hours by smaller ones. The dial has the common minute marks, and at the extreme outside are the Chinese numerals, running from one to twelve. Inasmuch as our recent treaty with Japan has opened three of her cities to our commerce, it is presumed that a considerable trade will spring up on the introduction of American clocks, and through a policy like that pursued by England, open more ports or reduce the duties.

II. WATCHES.

We come now to the "very poetry of mechanism"—the watch. It is a singular fact, that while more clocks are annually manufactured in the United States, and watches are in more general use than in any other country in the world, the manufacture of watches here is quite limited. Nuremberg's egg, as a watch was at one time called after Nuremberg, the supposed inventor, is so rarely a production of our own, that our watchmakers have been called, not inaptly, the foremen of the manufactory. They do little more than inspect, correct, repair and regulate the watches which have been made elsewhere and imported. The cheap living of the Swiss, the low wages of English workmen, and the nominal tariff on importation, have hitherto been considered insuperable obstacles to the introduction of the watch manufacture in this country, but recently a firm in Boston, I am told, have attempted it with fair probability of success.

In no branch of manufactures is the subdivision of labor so complete and perfect as in that of the watch. The leading makers, whose names we take as a guarantee of excellence, rarely manufacture the watches they indorse. In Switzerland, the movements are mostly made by the peasantry, certain parts being in themselves trades separate and distinct, and whole families, men, women and children, are engaged in preparing the work for market. When finished, it is brought to Locle, Chauxdefond, Geneva, and other large watch manufacturing cities, and disposed of to the highest bidder, or sometimes a fair is held at which the merchants and traders attend and make their purchases.

In the common vertical watch, the barrel containing the spring is near one edge; and next to it is the fusee. The spring within the barrel, formed by a narrow strip of highly tempered steel, is fastened at one end to the interior of the barrel, and at the other to the axis or arbor of the barrel. A fine steel chain runs from the exterior of the barrel to the exterior of the fusee, and when the watch is wound up by the application of the watch key to the arbor of the fusee, the chain is drawn from off the cylindrical surface of the barrel, and wound on the groved surface of the fusee. In this process the spring within the barrel becomes coiled round very tightly; and it is the recoil or resistance of the spring which slowly pulls the chain back to the barrel and causes the fusee to rotate. The fusee is concentric with a toothed wheel, whose teeth act upon those of a second wheel and those upon a third, and so on throughout the intricate machine; one wheel rotating with such a velocity as to enable an index hand upon its axis to mark hours, another minutes, another (in a seconds watch) seconds, and another to act upon the regulating or pendulum apparatus.

Escapements.—The most important part of a watch, and that by which its name or designation is frequently determined, is the *escapement.* This is a term applied to a combination of parts in a clock or watch, which has for its object the conversion of the circular motion of the wheels into a vibratory motion, as exhibited in the pendulum. In a watch, this combination consists of the scape wheel, together with all those parts lying between it and the balance, and which are concerned in converting the circular motion of the wheels into the alternating one of the balance. The pallets act upon or between the pointed teeth of the scape wheel by a reciprocal or oscillatory motion.

Of escapements, there are five kinds, viz., the *Verge or Vertical, Horizontal or Cylinder, Lever, Duplex and Chronometer.* Messrs.

Palmer & Bachelders, 91 Washington street, Boston, one of the leading watch importing houses in that city, and sole agents for some of the principal manufacturers of Europe, have published an excellent little Treatise on the "Structure of Watches," and to their courtesy we are mainly indebted for the following description of the escapements.

The *Vertical or Verge Escapement* is the oldest of all, having first been adopted in clocks, and afterwards applied in the construction of watches. The balance wheel, formerly termed in primitive clocks the crown wheel, revolves vertically to the plane of the horizon, supposing the watch to lie on its face. Watches with this escapement have not the maintaining power, hence they stop while winding, but may be regulated to overcome the loss of time occasioned thereby. They are especially suitable for boys and the laboring classes, as they are easily kept in order, and repaired with small expense if injured.

The *Horizontal or Cylinder Escapement* was invented by an English clockmaker, Graham, though now generally put to Swiss watches, and was originally so called, because the escape wheel acts in a horizontal position. In this escapement the verge or balance arbor is spread out about its middle into a portion of a hollow cylinder. The teeth of the escape wheel are of the shape of a flat iron set upon a pin, and just long enough to be contained within the cylinder. As the tooth escapes from the inside of the cylinder, it gives the impulse ; for as the balance turns to the right, the sloped part of the cylinder comes up to the point of the tooth, and so the tooth in making its way out gives an impulse to the balance ; and then the next tooth strikes against the outside circular part, and rests on it until the balance turns the other way, and then that tooth makes its way into the cylinder, giving an impulse in so doing. The escapement, therefore, is not detached, as a tooth is always pressing either upon the inside or outside of the cylinder.

The principal advantage of this escapement is, that it admits of a watch being made thin, which, with ladies, is considered a great desideratum ; the disadvantage is that it is delicate and liable to injury.

The *Lever*, with its recent improvements, may be pronounced the best of all escapements for a watch in ordinary use. The Lever has a notch in it, and the verge or balance arbor, instead of being a complete pinion, has but one tooth or pin that will act together as a wheel and pinion for a short distance in the middle of the vibration, but as soon as the pin has got out of the notch, the balance turns as far as it may without moving or being even in contact with the Lever, and when it returns the pin will go into the notch again, and first move the dead part of the pallet off the tooth of the escape wheel, and then receive the impulse and leave the opposite pallet with a tooth resting upon its dead part; therefore this was called the *detached lever*, as the lever is detached from the balance except during the middle of the vibration. The pin is usually made of a jewel, and it works with so little friction that you can hardly (if at all) stop the watch. The pallets are always made of jewels in good watches.

The advantages of this escapement may be summed up in these particulars—strength, moderate price, capability of bearing much external motion without derangement, and small expense for repairing if it meets with injury.

The *Anchor Escapement* is the same in principle as the lever above described; there is, however, this difference, it has no chain, and it is not as strong or as durable. Watches with this escapement are almost exclusively of Swiss manufacture, and their neatness fits them for ladies' use.

The *Duplex Watch* is so named from its escapement wheel having two sets of teeth, the cogs being placed upright, nearer the centre, while the long teeth are in the plane of the wheel; hence arises a double action. The advantage of this escapement is that it will continue to perform without cleaning or requiring oil for a long time. The objections to it are that it is of delicate construction; liable to stop in the pocket if not made and put together by a workman of superior talent; and if it meets with a fall, the injury done may cost twenty dollars or even more to repair.

Under these circumstances no gentleman should carry a Duplex watch about his person, when intending to take any violent exercise.

The *Chronometer* is doubtless the most accurate escapement of all. It is usually termed a detached one, because the vibrations performed by the balance are nearly detached from the pressure of the motive power during the greater part of its arc of vibration. One great advantage is that it requires little or no oil.

This escapement is now used almost exclusively for maritime purposes, and called ship Chronometers. It is of French invention, but greatly improved by English makers. Harrison, an ingenious English machinist, was the first who succeeded in making a chronometer that accurately determined the longitude at sea, and for which he received from the English government a reward of £20,000. But Arnold, the manufacturer of the celebrated repeating watch, not larger "than a silver twopence and its weight that of a sixpence," for which he received from George III. 500 guineas, has made improvements which have superseded Harrison's mode of construction. Very fine Swiss watches have been made of late, with the chronometer escapement, which have not been surpassed as timekeepers.

To nullify or compensate the changes of the temperature, which always affect the performance of a watch, an invention has been made called the *Chronometer or Compensation Balance*. The compensation is produced by the variation in diameter of the circle or balance. "The internal part of the rim is steel, while the external is of brass These are united by heat, causing a partial fusion of the brass, and consequent union with the steel, the degree of expansion of these metals upon the application of the same degree of heat varies. The brass expands more than the steel, and as it cannot release itself from this, so neither has it the power of extending itself in length, being restrained by the steel, consequently an increase of curvature is produced by the brass forcing the steel to change its original circular form. The power of the compensation balance hence varies, and compensates for the loss or gain in the balance spring, occasioned by changing temperature. The rim of the balance is cut open to admit of this variation in its form. The screws can be inserted in any of the holes, and according to their position in one or the other, they are moved more or less in towards the centre by the increase of curvature of the rim." To manufacture these balances, is one of the most difficult things a mechanic has to perform.

Watch Cases.—This branch of the watch manufacture is now extensively carried on in the United States, having greatly increased within the past few years. English and Swiss silver watches are almost invariably imported complete and prepared for sale; but gold watches are usually cased here. The advantage that manufacturers in this country have in casing of gold watches, is in the alloy of the metal. In the watch manufacturing districts of Europe, the cases must be made of not less than eighteen carats. In Switzerland a fine is imposed for the first transgression of this rule; fine and imprisoment for the second, and on a third conviction the license to manufacture is forfeited and withheld. But in this country cases may be and are made of any carat, from eighteen to eight, and also of what is called *common* gold, which sells at forty cents per pennyweight, to accommodate fashionable young men who desire to sport a gold watch without being able to afford one of standard fineness, or to suit those who may wish to rival the wealthy Chinese, who carry watches *in pairs*, as in India they wear shawls.

In the process of manufacturing a watch case, the gold, after being alloyed as required, passes through the hands of seven different persons. One melts it, another makes the case, a third lets in the movements, a fourth makes and attaches the spring; it is then passed to the polisher, then to the engraver, then to the turner, again to the polisher, then to the finisher, who pins the case together at the joints and adjusts the ring or bowl, and finally to the polisher, who gives it the final gloss, and washes it, when it is ready for use.

The price of cases chiefly depends on the weight and fineness of the gold, but in some instances much labor is expended upon them. The engraving alone costs from $5 to $25. A case of common gold can be sold at $20, or less, while others, like the magic cases, are as high as $90; the labor expended upon them costing more than half that sum. Much difficulty has been experienced in obtaining competent workmen in this manufacture, although greater wages are usually given than in most mechanical branches. We estimate the average earnings of competent journeymen watch case makers at $20 per week.

Most, if not all the cases made in the United States, are manufactured in Philadelphia, New York, and Newark, N. J. There are eleven manufacturers in Philadelphia, employing from twelve to fifty men each, and manufacturing cases of the value of $1,000,000 annually. The business requires a considerable capital, as the material and labor must be paid for in cash, while the cases are sold on a credit of four months.

One of the largest establishments in this business in Philadelphia, is that of Jacot & Brother, 65 south Second street, who supply with cases some of the most extensive watch importing and jobbing houses in all the principal cities of the Union. Celestine Jacot, a native of Switzerland, commenced the manufacture of cases fourteen years ago, and some three or four years since, associated with him his brother Victor. They now employ fifty men, and manufacture from one hundred to one hundred and thirty cases per week, or nearly six thousand a year, amounting in value to about $200,000. In the last inventory of stock, we are told, they had in process of manufacture seven hundred and seventy-seven ounces of pure gold.

To obtain a sufficient number of workmen, Mr. Jacot sometime since visited Switzerland, and brought over with him a number of families, advancing the money for the expenses of their journey, to be refunded out of the subsequent earnings. One of the Swiss thus imported, we are assured, makes sufficient from *overwork* to support his family of seven children, and is therefore enabled to lay by the entire amount of his *per diem* wages.

Gigon & Seydel, (successors to Z. & G. Gigon,) S. W. corner of Walnut and Dock streets, Philadelphia, are also largely engaged in the manufacture of watch cases, and are favorably known. G. Gigon was the junior partner of the firm of Z.. & G. Gigon, who for seventeen years conducted the business with an increasing reputation, and Mr. J. Seydel was for a number of years one of the head workmen in the celebrated establishment of "Helm & Warner." Both are thorough practical workmen. In beauty and fidelity of workmanship, elegance of shape, richness of engraving and of the gold, the watch cases made in this establishment will be found to compare favorably with those of the most celebrated manufacturers in the world.

Harper & M'Lean, S. E. corner of Walnut and Dock streets, are another house in this business that may be referred to with satisfaction for their enterprise, courtesy, and the excellence of their workmanship. The firm is composed of two young men, one of whom, Mr. Harper, acquired his knowledge of the art from Mr. William Warner, who was the first manufacturer of watch cases in this country, and the other partner, Mr. M'Lean, learned the business with Mr. C. Jacot. They employ about fifty hands, and manufacture largely for Philadelphia, New York, Boston, and Baltimore, both of the finer and more costly cases, as Magic and Miniature, Hunting and of the lower priced, as Detached Lever and Cylinder cases. Though young, they may be called godfathers to several of the other existing establishments, as the principals were formerly employed in this manufactory.

Tracy & Baker, Goldsmiths' Hall, Library street, also make superior watch cases.

How to manage a Watch.—Without the compensation balance oe ore referred to, it may be remarked that it is impossible to secure *perfect* time from a watch in ordinary use, as the changes of temperature always affect it. The fact that at one time a watch is carried in the vest pocket, and at another suffered to lie on the toilet table, will cause a variation in its time. The heat of the pocket will cause it to lose from one to two minutes during the day, while in the cooler temperature of the chamber it will probably gain a similar amount. Messrs. Palmer & Batchelders, however, advise that a watch should not be regulated for these amounts of error, but if the gain or loss exceed four minutes, after going two days, the regulator should be moved in the proper direction about the space of one division.

Watches should be wound as near the same hour every day as possible, and the morning is recommended as the best time, as the day is commenced more regularly than the evening terminates.

In winding a watch of any pretension to excellence, great care should be taken that the hand in which it is held be kept free from circular motion while the other is employed with the key.

A watch should not be suspended by a chain when not worn, nor should it be hung on a hook, as in either of these cases it might obtain from the action of the escapement an external pendulous motion, which would be fatal to correct performance. The back of the watch case when hung, should always press against something soft, and should never be laid on a hard substance, such as a table, as under such circumstances it might be liable to external vibration.

Leading Watch Importers and Jobbers. As we are not aware that watch importing differs essentially from a general importing business, which will be more fully considered in a subsequent chapter, we close this article with sketches of a few leading importers, in which the peculiarities of the business, so far as they exist, can be appropriately illustrated. One of the oldest and highly reputable houses in this trade in the United States, is that of Hildeburn & Brother, 72 Market street, Philadelphia. This house was founded by Samuel Hildeburn, who, having conducted the trade for nearly a half century with uniform success and an increasing reputation, recently retired with an ample fortune, leaving the business to his two sons, J. H. and H. M. Hildeburn, who have been thoroughly indoctrinated in its arts and mysteries.

An established reputation as a watch importer, is proof that the merchant is a complete judge of the relative merits of the different manufacturers of watches, and that he is a man of tried integrity. Few persons purchasing a watch can judge of its merits or value on inspection; they rely on the representations of the seller, who in turn trusts mainly to the judgment and representations of the importer. If he is ignorant or indifferent, time, "which testeth all things," will reveal it, and the reputation falls to the ground. It is a proof of mercantile integrity, for, as every one knows that the watches of certain manufacturers command higher prices on account of name alone, nothing can be more easy than to substitute a similar but fictitious one. When we reflect how many Johnsons there are in the world, and the reputation as a watch manufacturer of Joseph Johnson, 25 Church street, Liverpool, we may wonder that there are not a dozen Johnsons in the field instead of two.

Messrs. Hildeburn & Brother, whose long experience entitles their opinion to great weight, recommend the following makers;—of Chronometers, Wm. Dixon, Chronometer maker to the British Admiralty; Dent, of London; French, of Royal Exchange, and Adams & Co.—Of English Watches, Thos. F. Cooper, Joseph Johnson, M. I. Tobias & Co., Robt. Roskell, John Bold, George & John Bold, and R. Beasley

—of Swiss Watches, Jules Jurgensen; Louis Richard, who received the prize at the World's Fair, in London, for the best watch; Louis Dubois Sandoz; James Nardin, of Locle; and Moulinié, of Geneva. This firm also imports fine cutlery of Rogers' and other celebrated manufacturers.

Farr & Thompson, 112 Chestnut street, Philadelphia, have the benefit of the well earned reputation of their predecessors, and the prospects of a brilliant future. John C. Farr, the founder of this house, commenced the business of watch importing in 1822, and continued it individually, with the exception of a short period, until 1849, when he associated with himself one of his sons and Mr. C. E. Thompson. In 1853, after an experience of over thirty years, he retired with a fortune and in possession of the entire confidence of the community in which he has so long dwelt. One principle of sound economy, thoroughly appreciated by him, and practically carried out during his business career, was the necessity of keeping surplus capital always at command. Never investing in real estate or changing a floating into a fixed capital, he was enabled at all times not only to provide for the contingencies of his business, but also to take advantage of the fluctuations in the market.

The present firm of Farr & Thompson, is composed of Wm. M. and Geo. W. Farr, Jr., sons of John C. Farr, and C. E. Thompson. One of the firm visits Europe frequently to feel the pulse of the market, a point which all large houses consider essential to the successful prosecution of the trade. Possessing the advantage of an intimate acquaintance with the most celebrated makers, and with a good credit or its superior, cash, they can buy on such terms as enable them to offer satisfactory inducements to wholesale dealers in all sections of the country; and having the benefit of Mr. John C. Farr's experience in avoiding the quicksands of bad debts through doubtful credits, their future course, with the blessing of Providence, can scarcely fail to be onward and upward.

Platt & Brother, 20 Maiden Lane, New York, are large and celebrated manufacturers of Jewelry, Silver and Plated wares, as well as Dealers in Bullion and importers of watches. They have probably a greater number of skillful operatives employed in their manufactory, than any similar establishment in America, and consequently orders from wholesale dealers in the cities and the country, can be supplied with facility and dispatch.

As importers, the arrangements of Messrs. Platt & Brother are so perfect, that nearly every new and desirable article of foreign production, that comes properly within the province of their trade, is offered at their warehouse in New York, almost simultaneously with its appearance in Paris or London.

This house was founded in 1828, by the present partners, George W. Platt and Nathan C. Platt, who, since that time, have built up their immense business, accumulated their capital, and attained a rank as merchants and manufacturers only equalled by their character as citizens. "The great springs of their success," to use their own language, "have been industry, economy, active energy and commercial integrity—the only course of policy which can prosper through a long series of years and through the many vicissitudes of modern commerce."

The house of THOMAS C. GARRETT & Co., 122 Chestnut street, is one of the most respectable and one of the oldest in the city of Philadelphia, having been established by Philip Garrett, as long ago as the year 1800. In 1826, he associated with him his son, the present senior partner, and in 1836, the elder Mr. Garrett retired from the business, leaving it in the hands of Thomas C. Garrett, who shortly after connected with him Eden Haydock, under the firm of Thomas C. Garrett & Co.

This firm is extensively engaged in the importation of fine watches, jewelry, platedware and cutlery, as well as in the manufacture of silverware, and other articles connected with their business, and has a well deserved reputation for repairing all kinds of watches. At home they are well known, but to strangers we would say, that so careful have the members of this house been of its reputation, that in a large business, of more than half a century, they have seldom been called on to exchange watches they have sold on account of their not keeping time, and in manufacturing silverware they are particular to have the silver of standard quality, and use no other. It is no small compliment to the integrity of a house, to find some of its old customers so infatuated as to contend that the house with which they deal is the only reliable one in the trade.

CHAPTER VI.

DRUGS AND CHEMICALS.

The importation, manufacture and dispensing of Drugs, Medicines and Chemicals have become among the most important and lucrative branches of business in America, and there are circumstances connected with the history and present condition of the several departments which are well worthy the attention of the mercantile public.

The original apothecary in the colonies, was the practising physician, who imported his own supply of drugs from the mother country, and dispensed them himself. A corner of the principal store in the town was allotted to the few medicines which were in common use, and which all knew how to use, such as Glauber Salts, Cream of Tartar, Flower of Sulphur, Castor Oil, &c., and to the most famous patent medicines of the day,—Turlington's Balsam, Godfrey's Cordial, British Oil, Bateman's Drops, and Opodeldoc.

The druggist soon made his appearance in the chief town of the colony, relieving the physician from his dependence on a foreign supply, and selling paints, window glass, oils, dye stuffs and garden seeds, to enable him to make the two ends of his accounts meet. With the progress of population and wealth, came the division of labor, which took from the general store the few shelves allotted to medicines, transferred the compounding of his prescriptions from the physician to the apothecary, and separated the apothecary from the wholesale druggist and the retailer of paints, dye stuffs and garden seeds. The making of this separation raised the apothecary from the mere shopkeeper to a sort of professional rank. As his business touched, on the one hand, the science of medicine, and on the other that of chemistry, it was soon found that he who was best educated, who added to worldly common sense and prudence in the management of his business, the greatest scientific skill in his calling, was the one destined to be most successful in the pursuit of wealth.

About thirty-two years ago, an accidental circumstance, the attempt to introduce into the market an importation of spurious opium, awakened the druggists and apothecaries to the necessity of adopting some means for protecting themselves and the public from such frauds. They naturally thought of an association for the purpose and there were men among them who took advantage of the feeling that prevailed, to lay the foundation of the Philadelphia College of Pharmacy.

It was hoped that this institution, by establishing a school of Chemistry and Pharmacy, in which all apprentices should be expected to graduate, after regular attendance on the lectures, and a thorough examination into their qualifications,—by uniting the members in a co-operation for the common good and mutual improvement,—would gradually elevate their social and scientific position in the community, and create a class of apothecaries whose attainments should be in advance with the progress of medical and chemical science. The college has prospered beyond the most sanguine expectations of its founders. For more than thirty years lectures on Chemistry and Materia Medica, and latterly on Pharmacy, have been delivered to steadily increasing classes. The humble professorships of the Philadelphia College of Pharmacy have been the stepping stones to the highest stations in the most distinguished medical schools in the country. About one-third of the apothecaries of the city of Philadelphia are its members or its graduates, and we do not fear to say that as a body of men, intelligent and skillful in their profession, they are unsurpassed in any community, while we could name individuals among them, who have few superiors in their profession, as regards scientific knowledge and practical skill, in any metropolis in Europe.

The high standing of the Philadelphia School of Pharmacy has created a demand for the services of its graduates in other cities, and they are to be found throughout the south and the west, as far as the Pacific ocean, sustaining the reputation of their college, and giving tone and character, wherever they are established, to the business of the apothecary.

The lectures are frequented by an annually increasing number of pupils from abroad, and there is no reason to doubt that a diploma from this, or some other school of Pharmacy, will in the course of time be as indispensable to the practising apothecary as the degree of doctor of medicine is to the practising physician. For the information of strangers desiring to attend, we subjoin the official advertisement of its lectures, which gives all the necessary information respecting them.* Young men attending this course of instruction, can some-

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* LECTURES IN THE PHILADELPHIA COLLEGE OF PHARMACY.—Thirty-third Session of the School of Pharmacy, 1853–4.—The Lectures in this institution commence on Thursday, October 6th, and terminate about the 1st of March. They will be held in the Hall of the College, Zane street, on Tuesdays, Thursdays, and Saturdays, two lectures each evening, at 7 and 8 o'clock.

The lectures on Chemistry will embrace in a systematic view the laws, operations, times procure places for the winter as clerks, at low salaries. To those of a scientific turn, there can be no better way of occupying the in-

and results of this science, and its relations to Pharmacy. The elements concerned in inorganic nature, and their compounds, will receive such notice as their relative importance in this respect demands; and will be illustrated by experiment, diagram, specimens, and processes.

Organic chemistry will also receive its full share of attention, and all its compounds, possessing general or pharmaceutical interest, will be brought under consideration in a similar manner.

The lectures on Pharmacy will treat of the elementary operations required in the preparation of medicines, viz., weights, measures, and specific gravity, the management of heat, the manipulations in the processes of pulverization, solution, evaporation, distillation, crystallization, &c.; all illustrated by the most approved models, diagrams and apparatus.

The pharmaceutical preparations of organic drugs will be considered as follows, viz.: The simple preparations of each drug will be noticed under the head of that drug, and each compound preparation under the head of its chief constituent. Each class of preparations, as tinctures, extracts, plasters, &c., will receive a general notice in its proper place. The classification of the subjects will be in groups founded on the nature of their chief constituents; these may be starch, gum, sugar, resin, volatile oil, fixed oil, tannin, alkaloids, &c., each group being prefaced by a general description of the principle or principles giving it name. The preparations of each drug will be preceded by such notice of its chemical constitution as will exhibit the kinds of treatment best calculated to extract and preserve its active portion.

The course will conclude with the processes for those inorganic chemicals which may be prepared by the apothecary himself, when desirable, without any reference to their systematic chemical relations.

The lectures on Materia Medica will be exclusively devoted to vegetable and animal substances, their origin, commercial history, characters, composition, and medical properties, together with their adulterations and the means of detection. The course will be commenced with three lectures on the elements of botany, and will be made practical and demonstrative by the exhibition of an extensive collection of the substances, their varieties and falsifications, aided by accurate drawings, and a full series of exotic and indigenous plants in their dried state.

Experiments illustrative of the proximate organic principles and modes of their detection, with the difference between genuine and spurious articles, will be introduced whenever deemed interesting or important.

Robert Bridges, M. D., General Chemistry.
William Procter, Jr., Theoretical and Practical Pharmacy.
Robert P. Thomas, M. D., Materia Medica.

Extract from the By-Laws.—"*Qualifications for Graduation.*—Every person upon whom a diploma of this College shall be conferred, must be of good moral character, must have arrived at the age of twenty-one years, have attended two courses of each of the lectures delivered in the college, or one course in the college, and one course in some other respectable college of pharmacy; *or when there is no such college organized in his locality, in some other respectable* [medical] *Institution in which the same branches are taught;* and have served out an apprenticeship of at least four years, with a person or persons qualified to conduct the Drug or the Apothecary business; *at least three years and three months of which must have expired before the examination,*—of which circumstance he must produce sufficient evidence to the Board of Examiners.

"He shall also be required to produce an original dissertation, or thesis, upon some tervals of study than by engaging as students of analytical chemistry in the laboratory of Professor Booth, Dr. Wetherill, or some other teacher of practical analysis.

The establishment of a college of Pharmacy in Philadelphia was followed by that of similar institutions in New York, Baltimore and Cincinnati.

These spontaneous efforts of the druggists and apothecaries to elevate the character of their profession, by subjecting themselves to restrictions, and their apprentices to a course of study, which are in other countries imposed by government, and the success which has attended them, should not be overlooked by the mercantile community. They prove the practicability of imparting a great amount of valuable scientific knowledge to young men who are engaged in active employment through the day, and have only the evenings to devote to study.

There is scarcely any branch of business which does not touch more or less closely upon some science or art, such as mechanical or chemical philosophy, natural history, political and physical geography, commercial law and usage, systematic instruction in which would be of great service in fitting young men for the successful pursuit of business, besides occupying their time in a manner most advantageous to the intellect and the morals. The Trades' Union or Mechanics' In-

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subject of the Materia Medica, Pharmacy, Chemistry, or one of the branches of science immediately connected therewith, which shall be written with neatness and accuracy, and with the evidence of apprenticeship, be deposited with the senior professor of the school, on or before the twentieth of February, of the session in which the application shall be made. He must also be recommended in writing by the Committee of Examination and the Professors jointly, and if his application be finally approved of by the Board of Trustees, he shall, upon payment of five dollars to the treasurer, receive the diploma of the college."

"The regular examination for the degree shall take place in March previous to the meeting of the Board of Trustees. A second examination will be held when required, in the month of June, of which those students, who may not have accomplished their term of service at the regular examination, (and other qualified applicants,) may avail themselves."

Fees.—Matriculation fee, (paid but once to the Secretary,)	$2 00
Fee payable to each of the Professors, ...	8 00
Diploma fee, ...	5 00

Students who have previously matriculated, and all who are apprenticed to members of the college, are exempt from the matriculation fee, but they must invariably obtain the matriculation ticket before the commencement of each course. Graduates and members of the college, and all students who have paid for two full courses of instruction in the college are admitted to the lectures gratuitously.

ALFRED B. TAYLOR,
Secretary of the Board of Trustees, corner Walnut and Ninth Sts.

stitute, the Board of Trade, or Chamber of Commerce, which shall found a school of this kind for communicating such knowledge to apprentices and clerks, and shall reward a regular attendance therein, and competent proficiency, by a diploma, and by membership in the association, will confer a lasting benefit upon the trade or profession which it represents.

More especially is this instruction needed in the counting house of the merchant. Let any one reflect upon the vast extent and variety of knowledge—its minute accuracy in particulars, and the comprehensiveness of its general views—the fertility of resource—the quick adaptation of his plans to varying circumstances, which go to make up the character of an accomplished merchant, and then consider that this knowledge and skill are, in this country at least, the result not of systematic and well directed early instruction in the counting house, but the fruits of the man's own experience, often after repeated disappointments and failures; and that each one has in great measure to work out the problem for himself, while the greater part of this dearly bought skill and experience dies with him, and has to be reacquired by each successive generation. Let any one reflect upon all these circumstances, and he will see the importance of accumulating and perpetuating this knowledge and experience. It is true, that much of it is, from the very nature of the case, strictly personal and individual, and when gained, requires, for its successful application, a peculiar combination of faculties of a high order. But with what advantages would a young merchant begin his career, if, in addition to the knowledge *imbibed* in the counting house, he had attended, during his apprenticeship, courses of thorough instruction upon the natural history of the various objects of commerce; their several kinds; their sophistication; the countries which produce and consume them; the processes which they undergo to fit them for use, and the purposes for which they are used; the duties levied upon them; the quantities in which they are produced and consumed; lectures upon commercial law and usages; the principles of banking, of exchange, and of accounts! If it were made obligatory to attend such lectures, and to undergo the examinations requisite for gaining a diploma, and if all this instruction were preparatory to admission into a free guild of merchants, with no attempt at monopoly, but that of skill and learning, and competition in all honorable ambition, we do not doubt that the results which have so signally attended the foundation of the College of Pharmacy, would be attained in as high a degree and on a greater scale. A class of skillful and accomplished merchants would in a few years be educated, and the influence of such instruction in increasing the foreign trade, and elevating the mercantile character of the city which should adopt the system, could not fail to be powerful.

The Drug Trade in our large cities is conducted by three classes of traders; the drug importer, the jobber, and the retailer or the apothecary. These limits are not strictly maintained except by a few, for the retail druggist generally supplies orders from country physicians, and the jobber is very often his own importer.

1. *Importers.*—A large proportion of the leading drugs used in the United States, are the products of foreign countries, and must be imported. To detail them all, however, would be an endless task. The best antimony is imported from Hungary; asafœtida is the fetid concrete juice of a plant that grows in Persia; camphor comes from the East Indies and Japan; cassia from the West Indies; jalap is a Mexican plant, found near the city of Xalapa, after which it is named; the best opium is the juice of the white poppy that grows in Turkey, Egypt and the East Indies; hellebore is a native of the mountains of Switzerland and Germany; sarsaparilla is imported from South America, Honduras, and Quito; and senna and scammony from Arabia. There are a few houses in the United States largely engaged in the importation of drugs, but the greater part of our drugs are brought into the country by the general merchant, or consigned to commission houses to sell on foreign account. The drug broker is usually the agent through whom these foreign drugs are sold by the importer. His charge for brokerage is one per cent. He sells the article as it is, and it requires good judgment and careful examination to buy advantageously in this manner.

In this connection it may be proper to notice the most serious evil to which the drug trade has been subjected, viz. the adulteration of drugs, medicines and chemicals, by foreign manufacturers. The extent to which this has been carried on has been alarming. The trustees of the New York College of Pharmacy, a few years ago, stated that a blue pill is imported containing a per centage of mercury from ten down to seven and a half, mixed with blue clay and Prussian blue to give the proper design and color. Its composition, according to Professor Reid, is mercury, earthy clay, Prussian blue, used in coloring, sand in combination with the clay, soluble saccharine matters, insoluble organic matters, and water. Very large quantities of rhubarb, much decayed, the better parts of which are dark colored, with scarcely any taste or smell, having probably been exhausted to make extracts, come from England, invoiced there from 1½ to 3 pence sterling per pound. It is intended and used for powdering, color being given to it by tumeric, &c. Opium is often invoiced at one-third the value of good quality, and is found, upon examination, not to be worth even that. The same may be said of scammony. Most of the foreign extracts are not what they profess to be, and cannot be relied upon in the treatment of disease. The agent of an English manufacturer has said, and his remarks are in print, that it is a regular and systematic business, carried on by his principal and others in his line, to make articles for the American market of different qualities, one for the Atlantic cities, and another, very much inferior, "for the West," meaning thereby our Western States. He gives us, for instance, the following quotations, "compound extract of colocynth, 9*s.* 6*d.*; for the West, 5*s.*" The latter, we are allowed to infer, containing no scammony, only the poorest sort of aloes, and but little, if any, colocynth, or the extract from it. Again, we have "blue pill, 3*s.* 9*d.*; for the West, 1*s.* 8*d.*" It is not wonderful, remarks Silliman's Journal, that such uncommon doses as we hear of are taken, and indeed are required at the west, and that disappointment is everywhere experienced in the action of medicines; and these examples are but few out of many that might be given.

The only effectual remedy for this evil can be found in the improved knowledge and culture of buyers, and above all in the reputation and integrity of dealers and importers. Retail druggists and others, must fit themselves to be judges of the drugs they buy, or they must purchase from houses who deal only in drugs of approved quality, and then be honest enough to pay fair prices for good drugs.

One of the oldest and (we believe) the leading drug importing house in the United States, is that of SHIEFFELIN, BROTHERS & Co., Beekman street, corner of William, New York. Established for three generations, having a large capital and great experience, this firm is enabled on the one hand to compete with the most favored in the drug markets of Europe, and on the other, to distribute the articles of their importation, through wholesale druggists, to all sections of the country. A gentleman of skill and experience, connected with this house, visits Europe each season to make their selections, and inasmuch as they sell what they import from their own store, not through the intervention of brokers, the purity and superiority of their importations may be as confidently asserted as they are generally acknowledged.

The law passed by Congress, in 1848, enacting that medicinal preparations, usually imported with the name of the manufacturer, shall have the true name of the manufacturer permanently and legibly affixed to each parcel, or be adjudged forfeited; and that any drugs, medicines or chemicals, pronounced by a competent examiner, so far adulterated as to be inferior in strength and purity to the standards established by the United States, Edinburgh, London, French and German Pharmacopœas and Dispensatories, shall not pass the custom-house, has, no doubt, in part checked the importation of inferior drugs; but, nevertheless, we would much rather trust to the reputation, responsibility and experience of a house like that of Shieffelin, Brothers & Co., as a safeguard, which neither the knavery of foreign manufacturers would be likely to deceive or the allurements of profit overcome.

Wholesale Druggists.—The wholesale druggist on the sea board, or the drug jobber, as he is sometimes called, is in many cases the importer of his own drugs, but generally he makes his purchases from the leading importers, or from drug brokers, who sell, as we have stated, the importations of the general merchant and the consignments of the foreign manufacturer. His customers may be divided into two classes; the first class comprising the wholesale druggists of the interior, and the retail apothecaries at home; and the second, country physicians and storekeepers, and small retail druggists in villages and towns. Apothecaries, and the wholesale druggists of the interior, generally visit the cities personally, and buy in the market; that is, without being limited to a particular house. They thus themselves judge of the quality of the drugs before they purchase, and take advantage of low prices to lay in a stock for future consumption. But customers of the second class generally purchase all their supplies from one house with whom they are in correspondence, and it is almost invariably done by orders on a credit of six months. For the use of country stores, many of the medicines most in use are frequently put up in small and neatly labelled vials, and sold by the dozen. As the only guarantee of the purity of the medicines thus sold lies in the integrity of the wholesale druggist, it is of the greatest importance to the physician and the storekeeper, that they deal with houses of established reputation in this particular, no less than of competent skill in their profession. To aid beginners and others in making a fortunate selection in this essential matter, and also to illustrate the different departments into which the drug business is divided, we submit to their consideration sketches of a few leading wholesale drug houses.

In the first place, it may be remarked, that the drug business covers so large a field, and embraces such a variety of distinct articles and products, that almost every prominent house in the trade may be said to be a representative of some particular department. The trade with city apothecaries; with the larger druggists in other cities; with interior apothecaries and druggists in the country towns and cities; with country merchants alone, as, also, with the more remote trade with South America, West Indies, and California, &c., may be said to be distinct, and have their proper representatives in particular houses. To instance, a house of established reputation and great respectability, who do a plain, legitimate business, in supplying home and interior apothecaries and druggists with the articles they want, we would refer to M'Kesson & Robbins, Maiden Lane, New York. This house was established in 1833, by Charles M. Olcott, John M'Kesson and Daniel C. Robbins, and continued under the firm of Olcott & M'Kesson until August, 1853, when their connexion was dissolved by the death of Mr. Olcott. Since that time the surviving partners have conducted the business under the present style of M'Kesson & Robbins.

This firm employs, probably, as large a force as any similar concern in the country, and their trade covers more generally all sections of the United States than any other. During a business career of nearly a quarter of a century, they have been enabled to collect about them experienced assistants, and to avail themselves of the most improved methods of accomplishing the mechanical part of the business, points essential to the successful prosecution of the drug business, and by attention to which they no doubt owe a great portion of their success and position. One suggestion, however, here occurs to us, which we trust this firm will pardon us for making, inasmuch as, while it will not retard their future prosperity, it may materially advance the interests of their profession. In a memorandum furnished us by them, they state, "we have never expended $100 in advertising, have never employed any travellers, or resorted to outside means to advance our business, relying solely on superior management at home." This house has now attained its majority, having been just twenty-one years in existence, and we respectfully suggest to them to take into consideration, at an early period, the propriety—the duty—of apprising the tens of thousands who are now imposed upon with bad drugs, where they can obtain good drugs from a good house.

Rushton, Clark & Co., Broadway, New York, have several establishments, and represent various departments of the drug business. They supply apothecaries at home, and retail druggists in the interior; they import many of the foreign articles they sell, and ship to foreign ports, and as apothecaries or pharmaceutical chemists themselves, their stores are the favorite resort of those citizens of New York, who are solicitous for the purity of their medicines.

This establishment has been in operation since 1827, (twenty-seven years,) and as experience dictated, they have, from time to time, enlarged and improved their facilities, until now they may be said almost to have attained perfection in the selection or preparation of drugs and the art of compounding and dispensing medicines. Since the death of Mr. Rushton, the business has been conducted by the surviving members of the firm, George Clark and William Hegeman, in precisely the same manner as before. Mr. Hegeman, who has been in connexion with the concern for upwards of twenty-five years, and for several years had the principal supervision, still gives his undivided attention to the business, so as to secure to their extensive circle of customers the most perfect satisfaction. This is the well known house who introduced into New York, the *Pure Medicinal Cod Liver Oil;* and Mr. Clark spent a whole season in Newfoundland, superintending the erection of apparatus, and instructing their employees to make the oil so as to preserve its medicinal properties unimpaired. When we consider the great benefit this remedy has conferred in cases of consumption, their perseverance and enterprise deserve the highest encomiums.

Messrs. Rushton, Clark & Co. have four stores—165 Broadway, 10 Astor House, 273 Broadway, and 511 Broadway—all remarkable for the beauty of their decoration and the convenience of their interior arrangements.

John M. Maris & Co., 9 S. Third street, are a large and respectable wholesale drug house in Philadelphia, whose trade is confined almost exclusively to retail druggists. They are the successors of a house established more than a half century ago, when the drug business was very different both in character and amount of trade from what it is at present.

In conformity with the tendency of modern commerce to subdivision, which, especially in the drug business, has been found beneficial in inducing each of the leading houses to confine their attention more particularly to suit the wants of one class, Messrs. Maris & Co. have, as we have stated, selected for their particular branch the trade with retail druggists, and their stock and arrangements for this purpose are pronounced unsurpassed. Not only have they a complete assortment of drugs and chemicals, but they provide labels, scales, show-jars, and the thousand other articles required in fitting up a drug store, whether of the first class or of a cheaper character. In regard to the very important matter of quality, the customers of this house have not only an established reputation as a guarantee, but all articles are warranted as represented.

Linn, Smith & Co., 8 S. Third street, George K. Smith & Co., 149

N. Third street, Philadelphia, and J. W. HUNNEWELL & Co., 7 and 8 Commercial Wharf, Boston, are wholesale druggists deserving of a more extended notice.

Apothecaries.—The term apothecary has a different signification in England from that usually implied by it here. There the apothecary belongs to a class who originally were assistants in physicians' offices, prepared their medicines, and attended to minor surgery and practice. In process of time the physicians gave up their direct connection with pharmacy, and the apothecaries became a distinct class, who performed their old functions for the physicians, but without charge, except for medicines. The apothecaries, at a subsequent period, became a powerful incorporated body, and so trenched on the physicians by their gratuitous practice, and excessive charges for medicines, that the latter instituted *dispensaries*, or general pharmacies, where their prescriptions were put up at a more reasonable rate. The attendants on these dispensaries, after a series of years, became numerous, and formed the class now known in England as "chemists and druggists," or "pharmaceutical chemists," who are in all respects like the class in this country called "apothecaries," or retail "druggists and chemists."

Quite recently, (1852,) the Parliament of Great Britain granted a charter to those of the chemists and druggists of England and Scotland, who were members of the "Pharmaceutical Society of Great Britain," conferring on them the right to examine candidates for membership, and empower them to use the title of "Pharmaceutical Chemist," which name cannot be used by any chemist and druggist who is not a member, without a penalty for each offence. The object of this law is to bring into existence an educated body of pharmaceutists, who will gradually supplant those of inferior grade.

The apothecaries or pharmaceutists of the United States are very numerous, and their attainments and fitness for their duties exceedingly various. In the larger cities there are many that compare favorably with the best class of English pharmaceutical chemists, whilst here, as there, the larger number have been too imperfectly educated to perform their professional duties with satisfaction. The qualities desirable in a pharmaceutist are strict honesty of purpose, accuracy of observation, power of concentrating the attention in compounding prescriptions, and a conscientious care in the selection of drugs. To these should be added an unfailing patience, a disposition to oblige, a love of details, and constant attention to business.

In all the large cities of the United States there are apothecaries who, judged by these data, are not excelled by those of any other country, notwithstanding they may lack the ultra science of the *pharmacien* of France, or the university training of the *apotheke* of Germany. In confirmation thereof, we would refer, in Philadelphia, to WILLIAM PROCTER, Jr., S. W. corner of 9th and Lombard streets, and Professor of Theoretical and Practical Pharmacy in the College of Pharmacy; to HENRY C. BLAIR, whose Pharmaceutic store, at the S. W. corner 8th and Walnut streets, was founded in 1829; to SAMUEL SIMES, whose store, at the N. W. corner of 12th and Chestnut streets, is as remarkable for the order exhibited in its interior arrangement as for its external beauty; to the well known D. & E. PARRISH, S. W. corner 8th and Arch streets, and DURAND & TOURTELOT, 184 Chestnut street, opposite the Masonic Hall; to FREDERICK BROWN, 5th and Chestnut streets, and THOMAS J. HUSBAND, 3d and Spruce streets, both whom we shall subsequently notice in another connection.

The appreciation of the necessity of regular education among apothecaries in the United States, is in the ascendant, and the prospect for the future is yearly becoming brighter.

Druggists everywhere deal in a variety of articles not strictly officinal, which it is important for them to know where to procure, and of the best quality. Among these are Surgeon's Instruments, which are sold at the manufacturers' card prices. A discount is allowed on the card price proportionate to the amount purchased, and the home customer always has the advantage over the distant one in dealing with the manufacturer, so that he can generally sell them at the same rates that are asked by the maker.

The best cutlers have always been Philadelphia houses. WIEGAND & SNOWDEN, No. 15 North Fifth street, Philadelphia, are now the most extensive manufacturers of Surgical Instruments, Elastic Trusses, and Syringes, in the United States. Established for more than thirty years, and consequently now among the very oldest business firms in Philadelphia, their trade extends to all the leading drug houses in the Union. The quality of the articles made and sold by this house is unsurpassed. HORATIO G. KERN, 293 Market street, Philadelphia, is the next most extensive manufacturer of Surgical and Dental Instruments in the United States. Mr. Kern has long given a prominent share of his attention to the manufacture of improved Dental Instruments, and the excellence of the instruments made by him, as well as the completeness of his assortment, is acknowledged wherever known. He has an instrument for every tooth in the head, and can furnish dental cases at prices varying from $50 to $500. This house has been established for upwards of twenty years, and possesses facilities for supplying druggists as well as dentists, with all articles that come within the limits of the trade. J. H. Gemrig, 43 South 8th street, manufactures Surgical Instruments which are very favorably spoken of and highly esteemed by the best surgeons in the country, but as he confines his manufacture to sales at retail, or to order, his trade is necessarily limited in extent in comparison with the other houses above referred to. The greater part of the instruments used in Jefferson College, the University of Pennsylvania, and Pennsylvania Hospital, are made by him, and the esteem in which his workmanship is held by Professors Pancoast, Mütter, and others of distinction, is evidenced by their frequent complimentary allusions to it in their lectures to students. In addition to Surgical Instruments, Mr. Gemrig manufactures Dental Instruments, Elastic Trusses, and Bandages, of every description.

In addition to Surgical and Dental Instruments, druggists in the interior, and country physicians, who are called upon to discharge the double office of dentist and physician, are directing their attention to Artificial Teeth, the manufacture of which has not been carried on to any great extent until within the past few years.

Originally natural or human teeth were used, also calves and sheep teeth, next ivory, or teeth carved from the tusk of the hippopotamus. Fifty years ago there was not a porcelain tooth made in this country. Twenty years ago not more than two hundred and fifty thousand were manufactured annually in the United States, and but a trifling number in Europe. Since then the demand has been continually increasing, owing in a great measure to the rapid improvements made from year to year, and the more perfect applicability to the purposes designed, combining beauty and utility to such a degree as to leave almost nothing more to be wished for.

At the present time there are at least *two millions* of teeth made annually in this country, five-eighths of which are manufactured by the enterprising firm of Jones, White & M'Curdy, of Philadelphia, New York, and Boston, who, we are informed, find sale for their products, beside our own country, in various parts of Europe. It is a matter of some pride then that we have so completely outstripped the older countries in the manufacture and perfection of this important article.

The teeth are made chiefly from a combination of feld spar, silex, clay, &c., all of which are found in great abundance in several localities in the United States, to which are added various metallic oxides, to obtain the different colors desired. The materials are reduced to a powder, thoroughly amalgamated, formed into a pulpy mass by liquids, moulded in brass moulds, made very neatly, by which the proper shapes are obtained, and are then subjected to a strong heat, sufficient to fuse a portion of the ingredients of which they are composed. There is, perhaps, a capital of $300,000 invested in this business alone, giving employment to numerous persons, many of whom are females.

Retail druggists also sell a considerable quantity of *essences* and *perfumery*, and the wholesale druggist always counts upon supplying them at manufacturers' prices. There is probably no branch of manufactures in our country that shows more distinctly the progress and refinements of society than that of perfumery. We are also satisfied that very few of our citizens are aware of the large amount of capital now employed in its manufacture, or the great influence it wields over other manufactures necessarily connected with its production.

Previous to 1838, nearly all the perfumeries were imported from France and England, since then a great change has been accomplished, and nearly all now used in the United States is made in Philadelphia, where the most extensive establishments probably in the world are now located, giving employment to thousands of artisans, and improving the skill, taste and wealth of the community.

The printer and lithographer are daily called upon to exercise their ingenuity and taste in the production of new and beautiful designs for labels to adorn the bottles and packages, and elegant illuminated show cards to decorate the stores of purchasers. We have seen some of the latter, the engraving of which alone cost several hundred dollars; and there are establishments in Philadelphia employing thirty or forty hands, whose only business is printing and engraving perfumery labels. These labels are usually printed in rich colors, with embossed silver or gold designs, a style of printing which has been invented solely for use in this business.

The mould maker is engaged to exercise his skill in the fashioning of new designs for bottles; and the work thus furnished to the glass blower has advanced the art of glass making in this country more than any other branch of business. Many furnaces are employed the whole season in supplying the demand for perfumery bottles alone.

The potteries come in also for a large share in the furnishing of fancy jars, as well as the papermakers and boxmakers. The item of boxes alone, for one firm, R. & G. A. Wright, 23 South 4th street, being $200 per week, or $10,000 per annum. This firm, it is true, is one of the largest manufacturers of fine perfumery and fancy soaps. But the above statement will serve to show the value of these manufactures, of which, we believe, few have any conception.

The Messrs. Wright were the first who successfully began to compete with the imported article, and their success, as well as others, in this business, will show how completely they have succeeded. They are now about erecting, in a central part of the city, a factory for the manufacture of fine perfumery and fancy soaps, taking in one hundred feet square, which, when completed, will be the largest of the kind either in France, England or America. This enterprising firm are also largely engaged in the importation of fancy goods suited to the sales of druggists and other fancy goods dealers, the demand for which of late years has more than kept pace with the growth of our country, and their establishment may be justly termed a desideratum.

The druggist supplies his customers with Window Glass and Hollow Glassware.

There are three kinds of glassware in the market, the flint glass, which contains a large proportion of lead; a hard white glass without lead made chiefly in the interior of Germany, and the common green glass. The principal flint glass works in the United States are in Pittsburg and Boston, where the greater part of the druggists' bottles and jars which are used in this country are manufactured. In Pittsburg, J. O'HARA DENNY, corner 3d and Market streets; JAMES B. LYON & Co., 43 Wood street; WM. M'CULLY & Co., Nos. 14 and 16 Wood street; BOBE & ALBIETZ, and A. & D. H. CHAMBERS, are all celebrated manufacturers of glass. In Baltimore, W. B. HOLLINGSWORTH & Co., 36 South Charles street, are large dealers in druggist's glassware, and we believe manufacturers.

An excellent and very cheap hard white potash glass is made in Bohemia, containing little or no lead, and can be obtained through the German agents in New York, on very advantageous terms.

The substitution within a few years of soda for potash in the making of glass, has greatly reduced the price, and increased the consumption of glassware. The principal green glass works are on the borders of the pine forests of New Jersey, where the best white sand abounds and fuel and materials are cheap. There are many large glass works in the immediate neighborhood of Philadelphia.

Card prices for the various kinds of glass, and a discount, according to the amount bought, are arranged every season by the principal houses; and the home customer possesses advantages in this arrangement, which enable him to fill his orders at manufacturers' prices.

CHEMICALS.—The most important of chemical manufactures is that of oil of vitriol or sulphuric acid. This acid is directly or indirectly the great agent of the chemist in effecting nearly all chemical decompositions. By means of it he procures his principal agents in other decompositions, namely, the nitric and muriatic acids; the former from nitre, and the latter from sea salt. It is essential to most of the processes for the making of alum, copperas, epsom salts, blue vitriol and bleaching salts. But its greatest consumption is for the making of soda ash from sea salt, for the uses of the glass blowers and soap-boilers. There is more sulphuric acid used for this than for all other purposes.

The works for making oil of vitriol and soda ash, in the neighborhoods of Glasgow, Liverpool, and Newcastle, are among the wonders of Great Britain, for their magnitude, the perfection of their arrangements, and the consummate scientific skill with which they are conducted.

So indispensable is the use of sulphuric acid in almost all chemical operations, that no country which is unable to supply its own consumption of this acid, can ever be a manufacturer of other chemicals to any considerable extent. Its condition in respect to this one chemical manufacture is, therefore, a sure indication of its capacity for conducting almost all others.

The first successful manufacturer of oil of vitriol in the United States, was John Harrison, of Philadelphia. He had spent two years in Europe in acquainting himself, as far as he could gain access to them, with the processes used by the chemists; and after his return to America devoted himself to the manufacturing of chemicals. How much earlier he succeeded, we have no means of ascertaining, but in 1806, he was fully established as a manufacturer of oil of vitriol and other chemicals, in Green street, above Third. His leaden chamber was a small one, and capable of making about forty-five thousand pounds or three hundred carboys of oil of vitriol per annum. So successful were these operations, that in 1807, he had built a leaden chamber eighteen feet high and wide, and fifty feet long, capable of making three thousand five hundred carboys per annum. The price which the acid then brought was fifteen cents per pound.

John Harrison was the founder of the present well known concern of HARRISON, BROTHERS, whose chemical works in Kensington occupy the site of their father's old establishment. They manufacture extensively white and red lead, sugar of lead, sulphuric acid, alum, copperas, pyroligneous acid, and the acetates of iron and alumina. They enjoy a high character for the purity and genuineness of these productions.

Sulphuric acid cannot be concentrated in leaden vessels beyond a certain density, and for bringing it to the strength required in commerce, the only means then known was to boil it in large glass retorts to the standard weight. This was a precarious operation, and the losses sustained from breaking the glass and spilling the acid greatly increased the cost of the manufacture.

There lived at this time, in Philadelphia, a celebrated foreigner, Dr. Erick Bollman, who had distinguished himself by a gallant and all but successful attempt, in company with Francis K. Huger, of South Carolina, to rescue General La Fayette from his guards, during his imprisonment at Olmutz. Dr. Bollman was a Dane, a man of powerful and versatile mind, a physician, a chemist, a political economist, and a general scholar. Among other pursuits, he had turned his attention to the working of crude platinum, of which there was a considerable quantity in this country, and for which there was no demand. He had brought from France the method then lately discovered by Dr. Wollaston, for converting the crude grains into bars and sheets; and, in 1813, he had wrought it into masses, weighing upwards of two pounds, and into sheets more than thirteen inches square. One of the first uses to which he applied these sheets was the making of a platinum still for John Harrison, for the concentration of his oil of vitriol. This still weighed seven hundred ounces, and contained twenty-five gallons, and it continued in use for about fifteen years.

This early application of platinum to the concentration of sulphuric acid, is highly creditable to the sagacity and ingenuity of the American manufacturer; for the use of platinum for this purpose was then a novelty in Europe, and had not been known for more than a year or two, and only to a few.

The next leaden chamber of which we have any account, was put up by Farr & Kunzi. It was a small chamber, and they concentrated their acid in glass.

Charles Lennig was the first Philadelphian who entered largely into the manufacture of oil of vitriol, by putting up extensive leaden chambers, and concentrating the acid in platinum vessels so arranged as to be kept constantly at work while discharging a steady stream of concentrated acid. His works were in full operation in 1831, and they still continue so under the present firm of NICHOLAS LENNIG & Co., at the new chemical establishment of this firm recently erected at Bridesburg, where they are largely engaged in this manufacture, as well as that of soda ash, alum, copperas, aqua fortis, nitric and muriatic acids. all the various preparations of tin for the use of dyers, such as tin crystals, oxymuriate of tin, pink salt, &c. Those at present engaged in the manufacture of sulphuric acid, in and near Philadelphia, are Messrs. Powers & Weightman, at the Falls of Schuylkill; George W. Geisse, and Maher & Landis, at Frankford; Potts & Klett, at Camden; Harrison, Brothers, at Kensington; Wm. Coffin & Co., at Camden. The last two consume all they produce in other manufactures, and a large proportion of that produced by the others is consumed in operations conducted on their respective premises. N. Lennig & Co. are the largest dealers in the article, and next to them Powers & Weightman, George W. Geisse, and Maher & Landis.

The largest oil of vitriol works in the United States are those at Newton, Mass. At Roxbury and at Salem, in the same state, are large chemical establishments, which make their own oil of vitriol.

There is a manufactory of sulphuric acid at Providence, R. I., and at Newark, N. J.; at Baltimore, at Pittsburg, at Cincinnati, at St. Louis, and at New Orleans. Several of these concentrate the acid in leaden vessels, or use it without concentration for making other products.

The war of 1812, and the commercial restrictions which preceded it, caused such a scarcity and dearness of chemicals, that numbers attempted the preparation of the more prominent articles; and the complete establishment of the manufacturing busniess in this country dates from this period.

Many of these works were undertaken by foreigners, who had learned something of chemical manipulations in the German, French or English factories, or by capitalists among our own druggists, who made use of foreign skill, or pretensions to skill, in getting their works into operation. It was in this way that factories for the making of Prussian blue, Schule's green, and other pigments and chemicals, were from time to time started.

Many of the foreigners had been laborers in the laboratories abroad, who had no knowledge of chemistry as a science, and whose skill was confined to their own limited routine of work. There were others of a higher character, men of competent education as chemists and of much intelligence. Of these, Dr. Gerard Troost was the most prominent. He was a Hollander, who had studied medicine and chemistry, and had been a favorite pupil in mineralogy of the celebrated Abbe Häuy. He was probably one of the best crystallographers of his day. He had been sent on a scientific mission to the East Indies, by the Dutch government, and in going out was captured by a French privateer, and carried into Dunkirk. After residing in Paris for about a year, he embarked for this country, where he arrived sometime in 1810. His learning and reputation soon made him friends. He settled in Philadelphia, was one of the founders of the Academy of Natural Sciences, and was employed in several chemical enterprises. He superintended for a short time the laboratory of S. Wetherill & Son; was then engaged in chemical works with Lechleitner, the Swedish consul, and afterwards, about the year 1815, superintended an alum and copperas works on the Magothy river, on the Eastern shore of Maryland. He did not possess the qualities of a practical manufacturer, and most of his enterprises were unsuccessful. He afterwards removed to New Harmony, with Owen, M'Clure and others; subsequently accepted a professorship in the University of Nashville, and became geologist to the state of Tennessee. Dr. Troost died in 1850.

Another of these intelligent foreigners was Abraham Kunzi. He was a Swiss, and had been educated as an apothecary, in a country where all the apprentices are taught pharmaceutic chemistry, and practised in making most of the officinal chemicals. He worked for some time with John Harrison, and then with S. Wetherill & Son. He soon entered into partnership with John Farr, a young Englishman, who had served in one of the best retail drug stores in London. The practical skill of Abraham Kunzi, the popular manners and mercantile enterprise and prudence of John Farr, and the fair dealing and integrity with which the business of Farr & Kunzi was conducted, rendered the firm eminently prosperous, while the circumstances of the times enabled them to lay the foundation of the most extensive chemical works in America.

The concern thus founded by Farr & Kunzi, is now owned and conducted by their pupils and successors, the well known Messrs. POWERS & WEIGHTMAN, who have not only enlarged its extent, but, if possible, advanced its reputation. This firm is now among the largest general manufacturing chemists in the world. They have two establishments; one at the Falls of Schuylkill, where they make, in addition to oil of vitriol, aqua fortis, nitric and muriatic acids, epsom salts, copperas, blue vitriol, alum and alcohol, all on a large scale. At their establishment, at the corner of Ninth and Parrish streets, Philadelphia, they manufacture sulphate of quinine, which is their staple article, the salts of mercury and iodine, citric acid, tartaric acid and its salts, and all the officinal chemicals of the British and American pharmacopœias. The reputation of this house is unsurpassed for the purity and beauty of its chemicals, and for the fairness and liberality of its dealings. It is not saying too much to add, that few examples can be found of a chemical establishment which, for a course of forty years, has uniformly sustained so high a reputation in all these particulars.

One of the earliest chemical laboratories in the neighborhood of New York, was that of Innes & Robertson, of Elizabethtown, N. J. It was established about the year 1810, and supplied the New York and Philadelphia druggists with aqua ammonia, sulphuric ether, sweet spirits of nitre, salt of tartar, benzoic acid, and refined saltpetre. In 1813 or 1814, they began to make calomel, and have gradually extended their list of articles. After the death of Robertson, who was an Englishman, the business was continued by his partner, and is still conducted under the firm of S. Whitehead & Son.

One of the principal factories now in operation in New York, is that of John H. Currie. He manufactures many of the finer chemicals, such as the salts of morphia, iodine and mercury; and has secured, by the purity and beauty of his preparations, the unlimited confidence of the trade.

There are several laboratories in the vicinity of New York, conducted by German chemists, who make a variety of fine colors, such as ultramarine, Paris green, the chromic reds, yellows and greens, Prussian blue, and a few of the more common chemical preparations. Jefferies & White have a large factory on the Jersey shore, opposite New York, at which they make roll brimstone and flower of sulphur.

The Roxbury and the Salem companies, in Massachusetts, make aqua fortis, muriatic acid, copperas and alum; and the latter, in addition to these, makes blue vitriol on a large scale.

Throughout New England chemical factories spring up beside the great print works and dye houses, and prepare the acids and mordaunts used in such large quantities by them.

The Pennsylvania Salt Works, at Tarentum, near Pittsburg, will probably become one of the largest chemical works in the Union. With bituminous coal and copious salt springs on their own grounds, and a great market for their products at their own door, the company possesses unrivalled facilities for the cheap manufacture of soda ash. They make their own oil of vitriol, and have engaged largely in the preparation not only of soda ash, but of a cheap and nearly pure caustic soda, which seems likely to supersede the common soda ash for many important uses.

Some of the earliest chemical works in the country were established in Baltimore, although most of them have been discontinued. Isaac Tyson & Son, of that city, make chromate and bichromate of potash, and epsom salts. Being the owners of the principal beds of chrome ore in the United States, they are the great American manufacturers of the chromates of potash, besides being large exporters of chrome ore. William Davidson & Co., of Baltimore, are large manufacturers of Prussian blue, and the chrome colors.

Eugene Grasselli, of Cincinnati, is the chief manufacturer, beyond the mountains, of aqua fortis, and muriatic acid, of alum, copperas, and the chemicals in common use. Harwood & Marsh, of the same city, make oil of vitriol. The great abundance and cheapness of animal offal during the season for slaughtering hogs, has attracted to Cincinnati the makers of prussiate of potash, there being two establishments there for the manufacture of that article.

In Philadelphia, besides the establishments of Powers & Weightman, N. Lennig & Co., and Harrison, Brothers, whom we have already noticed, there are many extensive and important chemical manufactories.

Rosengarten & Sons, formerly Rosengarten & Denis, corner of Vine and 16th streets, Philadelphia, are largely engaged in the manufacture of sulphate of quinine and other pharmaceutical preparations. This house was established by the senior partner, Geo. D. Rosengarten, in 1823, and has earned the highest reputation for the purity of its manufactures, and integrity in its dealings. They were among the first to manufacture the valuable vegetable alkaloids in this country, and have prepared them ever since of the utmost purity. Their laboratory is one of the most important in the United States.

Charles J. Crease, 13 North Front street, makes nitric acid, aqua fortis, muriatic acid, Prussian blues, chrome greens, yellows, and reds. This is the oldest color establishment in Philadelphia, and has always enjoyed a high reputation for the beauty and excellence of its colors.

Potts & Klett make Prussian blue and ultramarine. Wm. Coffin & Co. make copperas, metallic nickel for German silver, and oxide of cobalt, the blue pigments so highly prized in painting porcelain and queensware.

Wetherill & Brother make red and white lead and litharge; and there are other large manufactories employed in making colors, refining camphor, and preparing the finer chemicals.

Many of the druggists and apothecaries carry on, in addition to their regular business, the manufacture of a few select chemicals.

Thomas J. Husband, N. W. corner of Third and Spruce streets, has for some years prepared what is known as "Husband's Calcined Magnesia," which has obtained a very considerable reputation, and is extensively used. In the twentieth report of the Franklin Institute, the judges of chemicals assert, that this magnesia "is believed to be the best in the United States;" and some of the most distinguished professors and practitioners of medicine have pronounced it quite equal to the genuine Henry's magnesia. Its superior qualities consist in its being entirely deprived of carbonic acid, in its freedom from unpleasant taste, smell or disagreeable property, and without roughness or grittiness to the teeth or palate. One teaspoonful of it is quite equal in strength to three or four teaspoonfuls of the common calcined magnesia; thus combining smallness of dose with the most agreeable form in which magnesia can be administered. Every one acquainted with the nature of magnesia, must appreciate the advantage of small doses that produce the desired effect.

Mr. Husband has been a graduate of the Philadelphia College of Pharmacy since 1833, and is an accomplished druggist.

Charles Ellis & Co., Importers and Wholesale Dealers in Drugs, 56 Chestnut street, have latterly prepared a similar article, which is coming into use. They are large manufacturers of spread adhesive plaster, and have a laboratory in the southern part of the city, in which they make many of the officinal chemicals and extracts.

Frederick Brown, N. E. corner of Fifth and Chestnut streets, prepares an "Essence of Jamaica Ginger," which has entirely superseded the use of ginger tea and powder, so long regarded as popular remedies in domestic practice for various complaints of the stomach and digestive organs. It is elaborately prepared from carefully selected articles of the best quality, and possesses, in a concentrated form, all the valuable properties of the Jamaica ginger, while it is warranted to be free from all irritating or other properties of an injurious tendency. In all cases where a warm cordial and grateful stimulant is required, in cases of imperfect digestion or nausea, it invariably gives relief; and to travellers who are exposed to the injurious effects of change of water, and to residents of southern climates, it is invaluable. It is recognized and prescribed by the medical faculty, and may justly be ranked among the most popular and useful of the family medicines of the United States. Mr. Brown also manufactures fluid extracts of Sarsaparilla, Rhubarb, Peruvian bark; and prepares Wistar's Cough Lozenges, and Chapman's Anti-Dyspeptic Pills from the original prescriptions.

Bullock & Crenshaw, N. E. corner 6th and Arch streets, carry on the manufacture of Osborne's American Water Colors, which are extensively used and deservedly esteemed. They deal largely in pure chemical tests for analysis and in chemical apparatus of all kinds for the use of colleges and teachers of chemistry. They also import skeletons and fine French anatomical preparations, surgical instruments and medical wares generally, and have issued very extensive catalogues with illustrations of their apparatus, &c., for the use of physicians and chemists. For the convenience of physicians and medical students, they have also published estimates for a full outfit for the country practitioner.

The principal drug market of the United States is New York; for although the merchants of Boston, Salem, Philadelphia and Baltimore, are large importers, the trade centres in this great commercial emporium. The prices of New York are determined by that great barometer, the London Price Current, and are almost wholly regulated by it. London is, in fact, the great drug market of the world, and its price current is the standard which regulates the prices of all other markets. Whenever our own is overstocked, the surplus finds its way to London, and it is upon London that our importers depend for immediate supplies when drugs are becoming scarce and dear at home.

The Tariff is a great check upon the extension of our trade in drugs, for the merchant has to regulate his importations by the home consumption, as the duties burden the trade with a tax which shuts us out from the European market. Were all those drugs and raw materials, which cannot be produced in our own country, relieved from this tax, and placed on the list of free articles, this branch of our commerce would receive a steady and powerful impulse. The energy and enterprise of the American merchant, and the cheapness with which American vessels can be sailed, would soon place the Atlantic ports of the Union among the greatest entrepots of drugs in the world; thus supplying us with the choicest and best articles for our own consumption, greatly increasing our commerce, and furnishing us with a means of making remittances abroad of immense value to our merchants.

CHAPTER VII.

THE DRY GOODS TRADE.

The trade in Dry Goods must be nearly coeval with the race, for clothing was one of the earliest necessities of our first parents, and it could not have been long before they exchanged the skins of beasts for some more delicate covering. Anterior to the date of the first chapter of profane history, woolen and linen fabrics, curiously wrought and brilliantly dyed, were among the accumulated treasures of the wealthy, and formed part of the traffic of the merchant. The tribes of Israel took the art of making "fine-twined linen," as well as woolen garments which had a "warp and woof," and straight "selvedge," with them out of Egypt; and afterwards in Solomon's time *linen yarn* was largely imported into Judea from the land of the Philistines, where the flax plant is indigenous. At what time the trade in dry goods became fixed as a distinct branch of merchandise, it is difficult to determine. The Romans had separate mechanical and mercantile fraternities, (*collegia et corpora opificum*) from which the modern *guilds*, first traceable in the tenth century, have descended. But the dry goods trade, as at present organized, is of quite recent date, neither the importer, commission merchant, jobber, or retailer, having confined himself to the sale of dry goods alone, until within a very few years. Considered as a branch of commerce this trade is the most important of any now existing in this country. It controls a greater amount of capital, employs a larger number of persons, and distributes a greater value of commodities, than any other branch of mercantile pursuit. The list of dry goods merchants in our larger towns is far longer than will be found engaged in the sale of merchandise under any other heading; while throughout the interior, the very name of "merchant" is associated with one who, whatever else he may sell, is a dry goods dealer. There are, certainly, "merchant princes" among those engaged in other branches of the profession; but in capacity, energy, and aggregate wealth, the dealers in dry goods, as a class, are emphatically THE MERCHANTS of our day and country.

Notwithstanding the seemingly exhaustless variety of articles, embraced in an assortment of dry goods, the whole stock may be classed under five heads, viz., *woolens, cottons, silks, linens, and miscellaneous*, the last fewest in number, and of least importance.

We shall briefly notice these in the order we have assigned them.

The manufacture of WOOLENS was confined chiefly to the continent of Europe, and more particularly to Flanders, until the year 1331, when the politic Edward III. gave it a fresh impulse in England by the introduction of foreign workmen, and especially by inducing a number of Flemish weavers, dyers, and fullers to take up their abode in his kingdom, at the time of the general discontent among the manufacturers in Flanders. John Kemp was the first who accepted the king's invitation. He had been an extensive manufacturer of cloth, and transferred his entire establishment, including his workmen and apprentices, to England, where he was prospered by the royal bounty. His generous reception led others of his countrymen to follow his example, and about seventy families emigrated to England the same year numbering many who had attained enviable skill as woolen fabricants. The tide of emigration once set in motion, continued for many years; but the new comers were not, in many cases, so well treated as their more fortunate pioneer. The mass of the English people regarded them with ill-founded jealousy; everywhere they were openly insulted, and they were not unfrequently most rudely assaulted. An act of parliament in 1335, gave them some protection, and for a few years the prejudice against them seemed gradually to wear away; but the disturbances were afterwards renewed at various intervals, and after the death of Edward III. the government sided with the populace, and passed severe laws, hampering both the manufacture and sale of woolens by aliens. These enactments, as might be supposed, hindered the growth of this branch of industry; and yet this foolish policy was persisted in with more or less severity until the accession of Queen Elizabeth. The religious persecutions on the continent during her reign, caused a large and valuable accession to the ranks of the Flemish manufacturers and merchants settled in England, and the laws which had oppressed them, were either repealed or allowed to fall into disuse. Under James I. the old policy was revived, although the laws were less rigorous and exacting; but after the revolution, a more liberal sentiment again prevailed. The use of machinery was discouraged by statute in the reign of Edward VI., and this statute was not repealed until 1807. Since then most of the machines now used for carding, spinning, and weaving wool, have been introduced into that country; and the final repeal of the duty on foreign wools, gave the only additional impulse necessary to its prosperity in that kingdom.

France, Germany, and Belgium are each large manufacturers of woolens, and the most popular broadcloths now imported into this country are from that portion of the continent.

The manufacture of woolens in the United States was on a limited scale, until the war of 1812 showed the importance of this branch of home industry. The Secretary of War then sent a memorial to Congress, asking a modification of the celebrated non-intercourse act, so as to allow of the importation of six thousand *blankets* for the Indian department! This was not granted openly, but as the woolen factories, even under the impulse then given to them, were totally insufficient to supply the wants of the country, an illicit trade was kept up with the enemy. During the war, the high duties imposed had created an artificial scale of prices, and as fine wool was bringing three, four, and sometimes five dollars a pound, sheep were sold at corresponding rates; and during the "merino fever" fine bucks brought in some cases *several thousand dollars* each! The history of the explosion which followed is already familiar to our readers; and to this great and disheartening revulsion we may trace the subsequent decline in this branch of manufactures. The woolen fabricants were nearly all ruined; and woolens were again chiefly imported. A few years later, the high price of the imported article again revived the courage of our manufacturers, and Congress aided the feeble mills by imposing a duty of 30 per cent. on cloths and cassimeres—just double the previous rate. England met this movement by giving fresh encouragement to her manufacturers, when our artizans again applied to Congress for relief. A bill to effect this object having passed the House, and been laid on the table in the Senate by the casting vote of the Vice-President, the celebrated Industrial Convention, made up of delegates from all the states interested, was held at Harrisburg, Pennsylvania, in August, 1827, to influence the action of Congress. It had the desired effect, and a farther increase in the duty was made at the next session of Congress. There is a wide difference of opinion as to how far such legislative aid is desirable in fostering industrial pursuits; but it is generally admitted that the protective tariffs, by giving increased confidence to our capitalists, if not in a more direct way, have contributed largely to their prosperity.

The total number of persons employed in woolen factories in the United States is given, in the census of 1850, as 22,678 males, and 16,574 females, but this must be far short of the truth, as the list of trades and occupations is notoriously imperfect. The State of Massachusetts has 119 woolen factories, consuming annually 22,865,952 pounds of wool, employing 6,167 males, 4,963 females, and producing

25,865,658 yards of cloth, besides 749,550 pounds of yarn. Pennsylvania has 380 mills, mostly smaller establishments, consuming altogether, only about one-third the quantity of wool taken by the factories in Massachusetts. Ohio has 130 woolen factories, Virginia 121, Indiana 33, and Kentucky 25. All of the states except South Carolina, Florida, Alabama, Mississippi, Louisiana, Arkansas and California, return more or less woolen mills, and in one or two of these named, the manufacture of coarse woolens has been commenced since the census was taken.

The products of our domestic looms now embrace almost every variety of woolens consumed in the country. In the finer broadcloths we have yet much to learn, but in fancy cassimeres, our manufacturers have nearly driven out the products of the old world. A few fine cassimeres are still brought out for the sake of the designs, but they are soon imitated, and generally undersold. Satinets are strictly an American production, having never been known to any considerable extent out of the United States, until within a few years, when, in spite of the duty, our merchants are selling them in Canada. Flannels are now made of every variety, and even the finest French are completely outdone by our skillful workmen. Blankets of the most sumptuous descriptions are manufactured in several of the states, and if common qualities of foreign were not admitted at a lower tariff than the raw material of which they are composed, the home production would defy competition. Mousseline de laines, although composed here chiefly of cotton warps, are usually classed with woolens, and in these, our manufacturers take precedence of everything imported, within the same range of qualities. Woolen shawls are now produced in great variety, and the importation has been materially checked, and will soon be entirely superseded. The Bay State mills at Lawrence, Massachusetts, were the first extensively known in this production, and their establishment is still the largest in the country, the monthly production being set down at 22,000 long shawls, and 15,000 square shawls. Their goods are now regularly taken for export to Canada, where they compete successfully with the celebrated products of British looms. The Watervliet mill, at Troy, N. Y., under the management of James Roy, Esq., although less extensive, produces woolen shawls, chiefly long shawls, which, for tasteful design, brilliant coloring, and perfectness of fabric, are not excelled by any made in this country or Great Britain. The Empire State mill, Waterloo, Peacedale, and others, produce annually large quantities of shawls, which have taken the place of the medium qualities formerly imported. Felted cloths, and cotton warp broadcloths are now manufactured to a considerable extent, and the production is yearly increasing.

The greatest obstacle to the success of our woolen manufactures hitherto has been *the tax upon the raw material.* Whatever may be thought of the policy of a high rate of duty upon the manufactured article, all who have examined the subject carefully, agree in the principle that the material of which any manufacture is composed, should be taxed as lightly as possible. This principle is grossly violated in the instance under review. In all cases, wool in its natural state pays thirty per cent. duty, which is the highest rate exacted upon any woolen fabric, while blankets are admitted at twenty per cent. or ten per cent. less than the raw material of which they are composed, and flannels and baizes pay a duty of only twenty-five per cent. It is easy to see that such a distinction operates as a direct bounty to the foreign fabricant, and this is one reason why even the commonest woolen goods, blankets especially, which require no art in their production, and which are almost entirely made by machinery, are imported so largely. This rate of duty was no doubt enacted with the well meaning, but mistaken intention of encouraging wool-growing; but it has hitherto, as far as its influence has been felt, produced a contrary effect; and to it are attributable most of the evils under which the wool-growers of this country have so long suffered. The most formidable and glaring of these evils has been the enormous fluctuations in prices. If the farmers always obtained the market price, the average of rates, one year with another would be, perhaps, a fair compensation. But it is very seldom that the higher prices are any profit to the producer, the advance being in almost every instance for the benefit of the speculator, while the reaction is severely felt in the consequent depression. The foreign wool grower will not send his produce to our market under the disadvantage of a thirty per cent. duty, unless the price here is so far in advance of its value in the freer ports of the world as to pay him for the extra tax. Consequently the moment our manufacturers commence working upon foreign wool, the importation of which pays a profit, they do it at a great disadvantage, and under an almost absolute certainty that in a great variety of fabrics, the foreign competition will be too strong for them. The result may be foreseen; the foreigner who gets his wool free, undersells us in our own markets—manufacturers are discouraged—the home production of many fabrics is broken up, or partially suspended—the demand for wool becomes less active—the receipts of foreign wools are sold off at a loss, while the supply of domestic accumulates—the wool market is broken down, and prices are reduced, perhaps, fifty per cent. Then our manufacturers can go to work once more, without fear of foreign competition; but the very moment that the price of wool advances again, so that the importers of it can afford to pay the thirty per cent. duty, then the foreign competition in fabrics again begins, and sooner or later will be felt in another reaction. Thus, under our present system, those manufacturers who have anything to fear from foreign competition, can only hope to thrive *while wool is kept at a point below which it is impossible to import it at a profit!* But at this low point the wool grower cannot afford to produce it; and therefore the interests of these two great classes, which ought to be identical, are made irremediably antagonistic. *Under this system one or the other must always be depressed.*

The difficulty, it will be seen, is not in the high prices which rule here for wool; but in the fact that whenever such high prices prevail, the foreign fabricant, who has his raw material duty free, always possesses the advantage. Take off this duty on wool at our ports, and then any advance in price would be comparatively uniform here and abroad; and the duty now exacted on the manufactured article, would be of some advantage in securing a higher rate of wages to the laborer employed in this branch of industry.

It needs no elaborate argument to show that the price of wool, under the system we propose, would not fall below a rate sufficient to pay a liberal profit to the producer. Once establish our woolen manufacturers on ground where they need not fear unequal foreign competition, and the rapid extension of their business, and their increased prosperity, would insure such an urgent and constant demand for the raw material, that the natural laws of trade would operate decidedly in favor of the wool grower. We have no doubt that if the duty on wool were repealed, the price would remain nearly uniform at a rate considerably above the average for the last few years. The duty on wool was abolished by Great Britain less than thirty years since, amid the general clamor of the agricultural population, who thought that their interests were grossly disregarded; but the result proved exactly the reverse of their fears. The most sagacious of the wool-growers in this country are far-sighted enough to see the benefit which would result to them from such a measure here, and are ready to co-operate with the manufacturers in securing its adoption. With this change in our policy the production of woolens would receive a fresh impulse, and our manufacturers might defy the world.

The following will show the import of wool and woolens into the United States during the fiscal year ending June 30th.

	1852.	1853.
Wool,	$1,930,711	$ 2,669,718
Cloths and cassimeres,	6,909,742	11,071,906
Woolen shawls,	715,814	1,402,582
Blankets,	1,046,361	1,455,659
Hosiery,	869,997	1,047,686
Worsted stuffs,	6,296,057	9,796,387
Woolen and worsted yarn,	220,259	280,896
Woolens, tambored or embroidered,	7,877	28,025
Flannels,	87,492	106,381
Baizes,	111,051	118,203
Carpeting,	730,967	1,217,279
Other woolens,	587,077	1,096,907
Total Wool and Woolens,	$19,513,405	$30,291,629

If our manufacturers were properly encouraged, and allowed free access to the raw material, a large portion of the above immense import might be produced at home, and our wool growers find a steady market for their wool at prices which would pay both them and the manufacturer.

The manufactures of COTTON form the next class in our division.

The Cotton plant is not alluded to in sacred history, although it had been used for manufacturing purposes long before the commencement of the Christian era. It was probably first cultivated in India, and from thence was introduced to Persia and Egypt. Cotton fabrics were used in Rome in the century before Christ, and the cotton manufacture was carried to a great degree of perfection in Spain, before the expulsion of the Mahometans. Cotton was used in England for candlewicks in the 13th century, but the weaving of cotton fabrics was not extensively practiced there until after the arrival of a large number of Flemish weavers, driven from the continent by the religious persecutions already noticed. The manufacture received a fresh impulse from the invention of the spinning-jenny about the year 1767; by which a large number of threads are spun at once. Richard Arkwright (afterwards *Sir* Richard) about the same time perfected a spinning frame which was used for spinning warps, so that the old practice of using linen thread for warps was abolished, and calicoes, in imitation of the finer fabrics of East India, were first woven in England. The *mule*, adapted for spinning finer yarn, received its name from its being a combination of the advantages possessed by the two machines already noticed, and was contrived by Samuel Crompton, in 1779. The power loom was first made by M. De Gennes, about the same time, but was not then perfected. Rev. Edmund Cartwright, D. D., invented a power loom in 1785, which was entirely successful, although a very clumsy affair compared with those of more modern construction. The use of cotton in England rapidly increased after these inventions were introduced. The climate of that country is too cold for the growth of cotton, but the importation, which was only 5,198,778 lbs. in 1781, was 18,400,384 in 1785; 99,306,343 lbs. in 1815; 583,000,000 in 1840; 800,000,000 in 1850; 830,162,900 in 1852, and 799,032,900 in 1853.

The machines for spinning and weaving cotton were copied from English designs in other European states. In France the manufacture has been very successful, and in printed cotton fabrics the French excel all the rest of the world. Switzerland has been quite celebrated for spinning and weaving fine cottons, and Austria, Belgium, Prussia, Saxony, Russia, Turkey, and in short nearly every European state, as well as most of the countries in Asia, are now more or less engaged in this work.

The United States were for a long period more celebrated for the production than the manufacture of cotton. The production of raw cotton was a matter of little importance here until the invention of the cotton gin, in 1793, by Eli Whitney, a native of Massachusetts, who had taken up his residence at the South. This machine, by means ot its metallic points like saw teeth, separates the fibre of the cotton from the seed, to which it adheres with great tenacity. After this invention the cultivation of the plant rapidly extended, so that the exports, which were only valued at $160,000 in 1793, in 1851 had reached the enormous amount of $112,315,317. The total value of the cotton exports in 1853, was set down at only $109,456,404, although the quantity shipped was greater than ever before in a single year, being officially stated at 1,111,570,370 pounds!

The first regular cotton factory established in the United States was located at Beverly, Massachusetts, but it was confined chiefly to the production of bed tickings, cotton velvets, and corduroys, and these were made with linen warps. It went into operation in 1787, and in 1789 received a visit from President Washington, then on a tour through the Eastern States. The great difficulty under which this, and all of the early establishments labored, arose from the jealousy of the British government, which prohibited with severe penalties any export of machinery, or even drawings of machinery, from that country. A handsome set of brass models of Arkwright's machines was secretly prepared for shipment, but was seized at the custom-house. Mr. Samuel Slater, who had served a regular apprenticeship to the business in England, came out in 1789, and although he was without models or drawings of the machinery needed, he succeeded in starting, at Pawtucket, R. I., three cards and seventy-two spindles, on the 20th of December, 1790. These were the first Arkwright machines operated in the country. The first cotton factory started in Massachusetts, with the improved machinery, was located near Pawtucket, on the other side of the river, and commenced operations about 1795. The mill at Paterson, New Jersey, was projected in 1791, and finished in 1794; this mill was afterwards burned in 1807, but other mills, which took their origin from the first named, continued to flourish. The early mills were chiefly directed to *spinning* yarn, but the war of 1812 gave a fresh impetus to this enterprise, and in 1813 a complete cotton mill for the manufacturing of raw cotton into finished cotton cloth was put into operation at Waltham, Mass. Since that time, and especially after the favorable legislation of 1816, the growth of this branch of industry has been constantly progressive, until now the heavier products of our cotton looms defy the competition of the world, and are sold by the side of British products in all neutral ports. The statistics of production are very imperfectly given in the census of 1850, which is the last national return on this subject, not all of the mills being included; but the totals, as given, show a very large actual result. The capital invested is stated at $74,501,031; value of raw material used annually, $34,835,056; number of operatives employed, 33,150 males and 59,136 females, producing annually, 763,678,407 yards of goods, (beside yarns, &c.,) valued at $61,869,184.

The plain heavy unbleached sheetings were among the first to become popular; but fine bleached shirtings are now produced at various establishments, which have almost entirely driven out the foreign fabric. Cotton duck, both the soft clipper, and the hard coasting, are now largely manufactured and have taken the place, to a considerable extent, of the linen sail duck made from Russian hemp. Cotton flannels, denims, cottonades, stripes and ticks, and various other cotton fabrics are also extensively produced.

Calico printing commenced in this country about the year 1790; but the printing of calicoes in that day was a very elaborate affair. The figures were cut upon wooden blocks, each separate color requiring a distinct engraving, and the cloth, being spread upon a table, was stamped by hand. The first cylinder machine for printing was put in operation at Taunton, Mass., about the year 1825, and since that the business has rapidly increased, until there are now annually printed in the United States over 130,000,000 yards of cotton fabrics! Machines for printing from a large number of rollers, in different colors, by one passage of the cloth, have lately come into use, until now a design in *twelve* colors can be printed by a single run of the machine. Those who buy calicoes at ten or twelve cents per yard, little think of the many ingenious devices by which the cost has been reduced from double that range. The ordinary method of preparing a cylinder for printing is first to cut the figure on a soft steel roller, then harden it, and by *pressure* bring out the same figure in relief on another steel roller; this in turn is hardened, and pressed against a copper roller three feet long, gradually covering it with the design. This copper roller, or cylinder, is then placed in the machine, and made to revolve first against another cylinder covered with woolen cloth that dips into a trough containing the color, then against the thin edge of a flat bronze ruler that scrapes off the color from the plain surfaces, leaving it only in the figure, and then against the cloth to be printed, which is drawn through the machine. If the design is elaborate, several of these cylinders, each printing a different color, are placed so as to come in contact with the cloth one after another. One machine will print an ordinary design at the rate of *one mile* an hour. In producing the common madder prints, the color is not printed on the fabric, but certain chemical preparations, called *mordaunts*, mixed with starch, or other thickening substance, are printed on the cloth, and then the whole is dipped in a madder dye, bringing out and permanently fixing the various hues.

A description of the principal establishments for calico printing, at Lowell, Gloucester, (near Philadelphia,) Pawtucket, Providence, Fall River, &c., would be very instructive, but our limits will not permit us more than a passing allusion to these great nurseries of American industry and art.

The production of lawns is of later date, but in this, as in calicoes, our manufacturers are steadily progressing, and will soon drive the foreigner from the field, or confine him altogether to the finest fabrics of French and English looms.

We annex a summary of the imports of cottons into the United States during the fiscal year, ending June 30th.

	1852.	1853.
Raw cotton,	$ 12,521	$ 40,447
Printed and colored cottons,	11,553,306	14,623,268
White cottons,	2,477,486	2,718,846
Tambored or embroidered cottons,	1,754,803	3,116,013
Velvets of cotton,	153,406	305,589
Do. of cotton and silk,	23,941	18,989
Cords, gimps and galloons,	4	98,851
Hosiery and articles made on frames,	2,152,340	3,002,631
Cotton yarn and thread,	887,840	1,095,518
Hatters' plush (part silk),	121,831	56,054
Cotton insertings, laces, &c.,	535,056	841,757
Cotton manufactures not specified,	564,539	2,695,554
Total imports of Cottons,	$20,236,573	$28,613,487

We come next to notice the trade in SILK goods, and in this, although we might enlarge upon the subject of imports, our description of the home production must necessarily be brief. Silk goods were first made in China, and the source of the production was for a long time a profound secret. Two Nestorian monks made an overland journey to China, discovered that the shining floss was spun by a worm, and brought some of the eggs of this insect to Constantinople in the year 552. The raising of worms was successful, and the production gradually spread over Europe. It was introduced into England sometime during the fifteenth century, but the rearing of the worms has proved a failure in that country, partly because the climate is not genial, and partly because the habits of the people are not adapted to its cultivation. The silk manufactures of England, however, are very large, (the raw material being imported,) there being in 1850, 272 factories, with 1,188,908 spindles, and 6,092 power looms, consuming 4,942,417 pounds of raw silk. France, and the south of Europe, are the most celebrated for their production of silk fabrics, although we still import largely from China.

The United States, both in soil and climate, are well adapted to the growth of the mulberry tree and the healthy development of the silk worm, but the habits of the people have hitherto presented an insuperable obstacle to its cultivation. The *Morus Multicaulis* speculations, too vividly and *painfully* remembered by a large class of our citizens to need description here, disgusted our people with that experiment. If the native (the white mulberry) had been introduced instead of the variety noticed, the culture might have had a less disastrous result, for it is now certain that this is the only kind worth growing for the silk culture. In 1844 the production of sewing silk reached its maximum in the United States, the return of that year being 396,790 pounds, of which 176,210 were produced in the State of Connecticut. Since that date it has gradually declined, the limited home production of raw silk, and the tax of fifteen per cent. on the raw material imported, having discouraged the manufacturers. There are still several establishments for the production of sewings scattered through the states, of which the most important is at Paterson, New Jersey.

Of late there has been more attention given to the production of silk fabrics; a small establishment has been started at Newport, Kentucky, which has five or six looms in operation, and is chiefly known to the public through "Friend" Jones, who has personally carried his products (mostly cravats) into nearly every market throughout the Union. A large establishment at Seymour, (formerly Humphreysville,) Connecticut, has commenced the manufacture of brocatelles for furniture, &c., which promises to be successful. About twenty-five looms are, or soon will be, at work, but the manufacturers are not yet in the full tide of successful prosperity. At Philadelphia Messrs. Horstmann & Sons manufacture ribbons to some extent, and at West Newton, (Mass.,) there is also a small establishment for their production. It is to be hoped that Congress will soon remove all duty on the raw material; for it is clear that the growing of cocoons will not become general until the manufacture has made farther progress. We annex some statistics of the total comparative import into the United States for the fiscal year ending June 30:—

	1852.	1853.
Raw Silk, ...	$ 360,836	$ 712,092
Silk piece goods, . . .	16,823,528	22,470,911
Hosiery, and articles made on frames,	599,673	1,124,680
Sewing silks, . . .	173,799	238,525
Silks tambored or embroidered, .	1,906,573	1,318,069
Silk hats and bonnets, . .	96,665	111,871
Floss, ...	17,911	10,839
Bolting cloths, . . .	47,052	40,232
Silk and worsted goods, . .	1,667,513	1,880,918
Manufactures of silk not specified, .	1,914,462	5,130,590
Total import of silks,	$23,608,012	$33,038,735

It would take altogether too much space to notice the great variety of fabrics embraced in the above large total of imports. It will be a long time before our country can adopt successfully the manufacture of all of these multiform appliances of luxury.

We come next to speak of the manufacture of Flax; and we are thankful that under this heading we can record a recent rapid progress in our own country. Our forefathers brought their spinning wheels with them when they came to these shores, and linen fabrics made by hand were among the first to attain some degree of perfection among us. It was the pride of a good housewife to have stores of household linen, not only for her own use, but as an outfit for her marriageable daughters, and this custom was retained for many years. The introduction of cotton fabrics made by machinery gradually limited the production of home made linen, until the distaff was at last laid aside, and the loom cast out as useless lumber. This country has consumed largely of linen goods in various forms, obtained from all parts of Europe, but chiefly from Russia, mostly coarse fabrics, Holland, Flanders, Switzerland, and Great Britain. Nearly all of the fabrics thus imported, have been produced by hand, and flax machinery has only recently been introduced. Within the last few years several persevering attempts have been made to establish the manufacture in this country. Mr. H. H. Stevens, at Webster, Mass., has been engaged for several years in making crash, diaper, and similar linen fabrics, in which he has been very successful, considering his moderate capital, the value of his productions exceeding $100,000 per annum. The Willimantic Linen Co., are just commencing the production of similar goods in a fine establishment at Willimantic, Conn. The most noticeable effort, however, has been made by the American Linen Co., at Fall River, Mass. This company has been organized with a capital of $500,000, and includes among its managers some of the shrewdest manufacturers in New England. The first step was to send out skillful mechanics to copy or purchase all that was desirable among the improvements in foreign machinery, and a large share of the first machines set in motion have been imported. The next step was to secure, if possible, a supply of the raw material from our soil, to which some portions of it are peculiarly adapted. To this end practical men of good address have been sent throughout the flax growing districts, and, wherever the culture might be profitably pursued, to awaken the attention of the people to its importance. For many years the flax plant has been chiefly cultivated for its seed, and the fibre has been wasted. The latter, under judicious management, might be made the most profitable part of the production, and it is to secure due attention to this fact, that the agents of the American Linen Co., have directed most of their labors. The company intend to produce nearly all descriptions of white and colored linens, shirtings and sheetings, coatings and pantaloonery, crash, towelling, and diaper; and their annual product when in full operation will exceed one million of dollars. Among their first productions, are the entire set of bed linen, &c., for the splendid new steamer Metropolitan.

If this establishment shall realize the sanguine hopes of its projectors, we may expect ere long to witness the dawn of a new era in the linen manufactures of this country.

The following will show the imports of flax and linen goods into the United States for the year, ending June 30 :

	1852.	1853.
Flax, unmanufactured,	$ 175,342	$ 135,684
Linens, bleached and unbleached,	7,603,603	8,897,317
Hosiery and articles made on frames	5,546	3,192
Laces, thread, and insertings,	160,385	252,170
Articles tambored or embroidered	52,227	84,779
All other linens,	854,333	1,250,749
Total import of linens,	$8,851,436	$10,623,891

We have inserted MISCELLANEOUS dry goods as a separate heading in our classification, because there is a large amount of "goods, wares, and merchandise" acknowledged as coming legitimately into the dry goods trade, which could not be classed under either of the preceding heads. Webster defines "dry goods" to be "cloths, stuffs, silks, laces, &c., in distinction from *groceries.*" This definition is wide enough to include pins, needles, hooks and eyes, fans, beads, buttons, and the thousand little articles that go to make up the assortment of *notions*, once so indispensable to the dry goods jobber, and even now sold by a large proportion of those engaged in the trade. Within a few years, the "trimming" stores have started up, borrowing fine cutlery, &c., from the hardware dealers ; looking glasses, fancy boxes, pocket books, &c., from other departments ; but making up their assortment chiefly from the articles usually sold by the regular dry goods dealers. This division of labor has brought some relief to the jobber, but at the expense of his profits, the fancy articles generally paying much the largest per centage of gains.

Having thus described the *material* for the dry goods trade, we come next to speak of the MERCHANTS engaged in it.

These may be divided into four great classes, viz., Commision Merchants, Importers, Jobbers, and Retailers, although these classes run into each other, so that the limits of each cannot be distinctly given. The COMMISSION MERCHANT receives the goods from the manufacturer or owner, who, even if not a foreigner, generally resides at some distance from the market, and is paid a certain per centage or commission for attending to their sale, and accounting for the proceeds. If the latter were only paid over to the consignor, when received upon the sale, but very little capital would be required for the prosecution of this business. But the consignor in most cases requires an advance upon the property, either when it is first sent forward, or before the credit upon the sale has expired ; so that to conduct to advantage a large commission business, either foreign or domestic, a heavy capital is required. The commission houses engaged in the sale of domestic goods, generally make their advances by accepting the drafts of the consignor at three, four, or six months, upon which the drawer obtains the money from some bank near his place of business. The consignee keeps the goods, upon which advances have been made, on hand as short a time as possible ; but as his sales are made to jobbers generally at eight months' credit, it follows that his acceptance matures before the obligation is due which he has received from his customer. To meet his own engagement, therefore, if his active capital be already employed, he may perhaps obtain the money by a discount upon the note of the jobber. Thus the business of the commission merchant, which at first sight appeared simple enough, is one requiring besides capital, great probity, tact, and judgment. As the first effort of this merchant is to obtain consignments, his first error is generally in this direction. He sets out upon an expedition in search of goods. New manufacturers just commencing their career are distrustful of him, and prefer consigning their goods to older merchants, from whose experience they may profit in their novel undertaking. He finds most of the older manufacturers pledged or bound by monetary obligations to other houses, but he does not despair. He knows that there is always more or less discontent among manufacturers or consignors ; for buyers will seldom pay a price to meet the views of the owner, and the *sacrifice* of the goods, instead of being placed to the account of a dull or declining market, is too often charged to the negligence or inefficiency of the consignee. The aspirant for business works adroitly upon this discontent, and not unfrequently is as lavish of his promises of impossibilities, as a lover trying to overcome the scruples of his mistress. If his efforts rest in promises, they may involve him in nothing but an after war of words ; but if he shall make *advances* at the rate of prices he hopes to obtain, it will probably take more than his commissions upon the sale, to balance the account in his ledger. And here is the explanation of many of the bankruptcies in this line of business. The heaviest losses of the commission merchant come almost as frequently from *over advances*, as from the defalcation of customers. Desirous of obliging his patrons, he becomes responsible beyond the value of goods in hand, either for raw material, or the purchase of machinery, and thus assumes a double risk, for half of which he receives no legitimate premium. The dry goods commission merchant as a rule ought never to advance upon *invoices*, where the goods have not come to hand. If he make exceptions to this rule, it should be where bills of lading or some other responsible guaranty for delivery is attached, and where the value of the property is well known. This is a very important point, as there is no commission paid for risks on that side, and none ought to be incurred. Commission merchants of sanguine temperament are very apt to be led into danger here, and make their advances upon security which they would consider wholly inadequate if offered by a customer. New beginners should be less profuse in promises, and more eloquent in performance; and this brings us to the sale of the goods. We have already noticed the duty of the consignee to assist the manufacturer with judicious advice in regard to the texture, style, and finish of his goods. This being done, and the property received under proper advances, it is next to be sold. Here not only judgment, but *courage* is needed. A manufacturer almost always over-estimates the value of his fabrics, and the merchant, if he goes by the owner's limits, will find his stock accumulating. Where no advances are made, of course such limits, if insisted upon, must be regarded; but the merchant, after forming his opinion with due care, should not hesitate to acquaint his consignor with it, and to act upon it where he has the power. There is a class of merchants who hold their goods a little above the market through the most active part of the season, selling only a few trifling lots to customers who will not return for duplicates. As the season advances they become alarmed, and reduce their price to such rates as would have been readily paid a few weeks before, but which now will not tempt buyers, especially as the goods are not fresh. At last in a panic they crowd their stock upon the market, at prices far below their fair value, and not unfrequently far below what might have been obtained with a little more patience. They seem to think that their former procrastination is to be compensated for only by a rash precipitancy, the one extreme excusing the other, where both are alike blameable.

Others of an opposite temperament cannot wait for the season's demand to open, and break down prices in their vain efforts to treat the trade to a little hot-house culture. They are impatient if a customer does not arrive simultaneously with the invoice, and make no discrimination between goods suited to the season, and those which must be kept over or sacrificed.

These opposite errors are both to be avoided by a commission merchant who would do justice to his consignors. The trade ought never to be crowded at the opening of the season, but the moment a healthy, legitimate demand appears, the goods should be sold. What they will then bring is, in a great majority of cases, their fair market price, and the more rapidly they can be sold while such a demand continues, the better for their owner. The merchant who pursues this course will not obtain such extreme high rates as the procrastinator does for his first few lots; but the *average* of his season's sales will show a far better result, while there will be a saving of interest,—the goods will have passed out of the way into the channels of consumption,—and all of his customers will be better satisfied.

In regard to the persons to be credited in the sale of goods, no specific directions can be given, and general rules have come to be disregarded. Intelligence offices, or agencies, however useful to the jobber, whose customers are scattered throughout the interior, beyond the range of his own observation, will prove of but little advantage to the commission merchant, whose regular customers are mostly in the centers of trade, and he must rely chiefly on his own judgment. There is one point which we think has been generally overlooked by writers on this subject. They all recommend frequent and candid communications with buyers in regard to their business and standing. It is well to have a thorough understanding with a new house in regard to the grounds upon which they ask for credit; but a house of two or three years standing should not require it; and where it does, it is seldom entitled to confidence. Any firm who, after a few years of trial, have not by their attention to business, and habits of prudence and economy, acquired an undoubted credit, may be classed as doubtful, no matter how eloquently their claims are urged by themselves or friends. A shrewd merchant, on being asked by a friend why he did not credit a certain firm, turned to his confidential register, and pointed to a page covered with writing. His friend perused the record, and exclaimed, "Why this gives a very satisfactory account of them!"

"I know it," replied the merchant, "but it is *too long!* I never trust anybody whose story runs over ten lines!"

Capital is, of course, one of the foundations of credit, but character, capacity, and industry are much more essential to success. Capital may be lost by some unexpected turn of fortune; but a merchant who, to use a quaint summing up of the whole in one phrase, "has it *in* him," will conquer even in the face of adverse circumstances.

The Importer, who comes next in our classification, is one who brings goods for sale from another country or state. In the dry goods trade this name is applied to those who import foreign goods on their own account, and sell them by the piece or package to merchants engaged in jobbing. Many of the jobbers are also engaged in importing to some extent, while not a few of the importers carry on a large jobbing business with the country merchants. The importer must have capital, taste, experience under judicious training, and a skill in anticipating the result of certain combinations. No very considerable business in this line can be transacted to advantage, without a large working capital. The purchase of goods abroad on a forced credit, followed by the payment of duties on landing, secured by a pledge of the invoice, is almost sure to involve the experimenter in a heavy loss. Most of the houses, regularly engaged in this trade, have liberal means, and although they sometimes meet with sudden reverses, and almost every season suffer a heavy loss on some portion of their purchases, yet in the main this is a prosperous business, and there are fewer failures in it than can be reckoned among other branches of the trade.

The importers, as a class, have suffered much from unjust imputations, growing out of the nature of their business. They are engaged in the sale of goods manufactured in another country, and to a large extent rivalling the productions of home industry. The government places a large direct tax upon every dollar of their stock, which must be paid before they can obtain possession for the purposes of distribution. As this tax adds its whole amount to the cost of their goods, they are charged with a good deal of sharp practice, not to say downright dishonesty, in endeavoring to make the burden as light as possible. There are cases, without doubt, where unscrupulous persons resort to the basest means, either to smuggle their goods, or enter them for duty below their real value at the place of shipment. But it is not probable that this prevails to any such extent as to warrant the popular prejudice on this subject. A large portion of the importers are citizens of this country, and most of those who are not, maintain a character which should place them above the suspicion of such gross dishonesty.

The Jobbers form the next class, and are more numerous than either the commission merchants or importers. Of all the classes enumerated, the greatest number of failures in proportion to those employed, occurs in this, owing to the nature of the business itself, and the peculiar qualifications essential to success. The customers of the jobber are generally spread over a wide extent of country, and their business is not subject to his inspection, so that losses to some extent by bad debts are inevitable. His customers are also for the most part merchants of moderate capital, or at any rate dependent for their means of payment upon the population among which they are located. Any disturbance of the general prosperity limits the demand for distribution, or interferes with the facilities for collection; and there is no class so helpless under such circumstances as the retailer. He has no auction house to resort to, and if his wealthy customers have not the means of payment he dares not coerce them, and could not if he dared. Consequently he must fail in meeting his note given to the jobber, and the latter, with all these little streams dried up at once, is still obliged punctually to meet *his* payments, or he is utterly ruined. A country merchant pays his debts as soon as he can raise the money, or if he be less prompt, as soon as he can conveniently *spare* the money; while his creditor must pay on the day his note matures, or be posted as a bankrupt. It is this one-sided arrangement of his business which leaves the jobber more exposed to embarrassments in his financial arrangements, and gives him less recuperative power, when he finds himself from some error of judgment, "in a tight place."

The jobber must have capital, but his business depends less upon the amount of this, than upon his personal qualifications. He must be a good judge of goods, for a stock well bought is half sold. This judgment is not to be confined to that narrow sense which some give it, a knowledge of the *value* of separate articles. There is many a stock of goods made up of items purchased at their fair market value, but together composing an assortment totally unsaleable. This is one of the most common, and yet most unfortunate mistakes, which a jobber can make. It is far better to have a dear stock judiciously selected and well assorted, than to have the cheapest stock of undesirable goods. A good buyer must understand *both*—he must be able to make up a tasteful selection, at the lowest market rates. Good credit is of course essential to buying cheap, but the price paid depends almost as much upon the buyer as the credit of his house. Besides, a buyer of good taste and sound judgment inspires confidence, and can all the more readily obtain credit. Whatever maxims may be found in "Poor Richard," which will not bear the test of a sound philosophy—this one is at least of the genuine stamp—"nothing is cheap that is not wanted." Of all the stock purchased by the jobbing trade, that portion upon which they make the least profit in the long run, is made up of "job lots" bought at a *sacrifice*. There is every year a growing conviction of this truth in the minds of our merchants, so that the distance in value between approved, tasteful goods, and bad styles is daily widening.

After the goods are well bought, they are, as we have stated, more readily sold; but they are still *to be sold*, and this requires a skillful salesman. The principals of a house must generally delegate a part of this duty to others, and the importance of faithful service, in this respect, is too much overlooked. Here is one cause of the too rapid multiplication of new houses; few clerks are encouraged to look forward to a long term of service in a subordinate position. The fault here is divided between the employers and employed. The former do not, in many cases, appreciate the value of the service rendered, and are not willing to allow the clerk a sufficient salary for a comfortable support, so that he must oftentimes look forward to an establishment of his own, if he would have the enjoyments of a home and the family circle. The principals of a house not unfrequently allow a salesman to leave them, in order to provide for his own necessities, when it would have been far better for both if he had staid, and been paid a liberal salary. It is a mistake to suppose that the details of a large business are best done, when managed by the head of a firm. The personal attention to details is too much of a fault generally with American merchants. They not only wear themselves out by packing goods and nailing up the boxes, (or if this is not done literally, by something of kindred importance,) but they spend time and strength over such details which can poorly be spared from a more general superintendence of their business. A celebrated merchant, himself a very active hard-working man, was associated in business with a brother, who seemed to pass his whole time, whether in the counting-house or sales-room, in watching the progress of the other's industry. A neighbor jocosely remarked upon what he conceived to be a habit of indolence, when the busy brother exclaimed, "I wish *I* could be as idle: why, John makes more money for us with his *grey eyes*, than I could make with four pairs of hands, and feet to match!" And it was even so. The elder brother carried the business, as a whole, in his cool head, and it was thus judiciously managed at all points.

But the employers are not wholly to blame for the loss of their most promising clerks. The latter too often feel *any* restraint upon them as irksome, and become possessed with the idea, that independence is only to be found in an establishment of their own. It seems of little use to assure them that an employment well paid, involving no risk, and accompained with little care, is really the least oppressive; or to point to the large number of those who have experienced the misery of assuming a burden, of whose weight they had previously no conception. They all, like the child in the fable, "want to see the folly of it too," and will not be persuaded from going into business on their own account. A little more reason on their part, and more generosity on the part of employers, would retain the services of a salesman where he is needed, and make one less on the list of adventurers.

The habit of *drumming* for customers, is now almost universal, and yet it is often disagreeable, sometimes disgusting, and always to be deprecated. Many jobbers keep one or more young men as drummers at each of the principal hotels, while most of the employees of their establishment do more or less service of this sort. They watch for customers as a cunning animal does for his prey; and if anything could reconcile us to the practice, it would be the adroitness with which they accomplish their object. The country merchant is booked on his arrival, is captivated by courtesy, is attracted by appeals to each of his appetites and passions, is coaxed, decoyed, and finally ensnared or captured. If there were but one such decoy for each victim, the system would be less objectionable; but where each drummer is at work upon every new comer, the situation of the latter often becomes intolerable.

We have, lastly, among the dealers in dry goods—the RETAILERS. The signification of the terms employed in designating the other classes, is obvious, but the derivation of this name is less generally understood. It is from the French *retailler*, and signifies *to cut again, to divide;* a retailer of dry goods is therefore one who sells in small quantities as needed for consumption. In the country there are few retailers who confine themselves exclusively to the traffic in dry goods; but in the city this trade is not only separated from others, but there is frequently a farther division, one merchant retailing silks, another woolens, another laces, or trimmings, &c., and the competition is quite as spirited as among the jobbers or importers. The retailer, if he is situated so as to secure an active trade, is less in need of a large capital, especially if he is in a manufacturing or commercial community where money is more freely circulated than in agricultural districts. There is no situation where popular talents contribute more largely to success than in a country store, whose patronage depends solely on the public favor. A merchant, gifted with good temper, exemplary patience, ready address, and a thorough knowledge of human nature, will grow rich next door to the starving cynic, whose goods are of as late patterns, and at as low a price. Occasionally, a man of sour temper, but possessed of sound judgment, and a thorough knowledge of his business, will, by keeping a more perfect assortment than his amiable neighbor, succeed in attracting a larger custom; but this patronage is in spite of his irritability, and will be heartily transferred the moment the same convenient assortment is found accompanied with greater affability. The best foundation for this business is downright, thorough-going honesty. We would not advocate *honesty*, simply because it is the best *policy*, as this is too grovelling a motive for the first principle of morality; nor is it worth while for a dealer to *pretend* to be honest, if he have not the principle, solely for the sake of securing custom. Simple country people readily detect the ring of the false metal. But it is essential to eminent success in the distribution of goods, where there is so much of detail, that the merchant should stand high for probity. Trickery of any sort, although it may put a few dollars in the pocket at first, will soon wear a reputation threadbare, and dry up the source of lawful gains. With honesty of purpose, and that due consideration of the comfort or welfare of others, which is the foundation of all true politeness, a merchant will become popular, even though he should be a little awkward in measuring a yard of tape. The shrewd merchant, who starts right, will go farther, and study the interest as well as the feelings of his customers; and this will very much assist him where the population is stationary and the custom regular. It is a poor policy to persuade a reluctant customer to purchase an article that is not likely in the end to suit his taste or convenience; and the less important the amount of the purchase the higher will be the customer's estimate of the patience and good nature which assists him in the selection; it becomes then a personal favor, as the immediate profit is seen to be no sufficient consideration. That kind of quackery which shows itself in wetting sound goods, that they may be sold as damaged, in order to attract custom; or in "selling off at cost," to get an extra profit from simple minded customers, may have a brief success like other quackeries, but will be sooner or later exposed.

The amount of stock to be kept on hand must be determined by each, according to his location and the nature of his business, but the smaller the better, where the assortment can be readily renewed.

The greatest evil connected with the country store is the wide credit generally demanded by a large circle of customers. The rapid increase of metallic circulation, which has followed the discovery of gold in California, and especially the diffusion of money through even thinly settled districts by the progress of works of internal improvement, bringing capital to the laborer, both by its direct expenditure, and the facilities of obtaining a market, have diminished the evil complained of, and increased the cash custom at most of the stores through the interior. Still a farther reform might be profitably effected.

Country dealers have not generally a proper estimate of the value of promptness in their dealings with their city creditors. The jobber may make no serious complaint of a little delay in payment, but it is always "reckoned in the bill." A prompt retailer, who punctually meets or anticipates his payments, will be enabled at all times to purchase at the very lowest market rates.

Many retailers have no proper idea of system or order, and thus not only is a great deal of time wasted in looking for articles not in their place, or which have no defined location, but the goods are tumbled and present anything but an attractive appearance. The arrangement of a stock of goods for *effect*, is not beneath the attention of the merchant who would make his store attractive, and will materially assist him in their disposal.

We cannot close, perhaps, with any better service to those engaged in this trade, than by a word of advice to those out of it. There is a great deal of misapprehension in regard to its duties, toils, and responsibilities. If these were more thoroughly understood, many of those who are anxious to embark in the business, would keep out of it, and save themselves and others from much trouble and embarrassment. The failure of any house brings not only disaster to its own interests, and entails loss on its creditors; but such failure is injurious to those not even remotely connected by any tangible pecuniary ties. Not to speak of the community of interest which all engaged in similar pursuits must more or less feel, there is one fact which cannot be overlooked—the debts of the bankrupt are in the end paid by the solvent. As in an insurance company the number of bad risks must increase the premiums on the whole, if the business is to be continued; so in trade, those who pay, pay not only for themselves but for all who are defaulters. If a jobber cannot afford to sell for less than ten per cent. profit, because of bad debts, it must clearly follow that if the latter were diminished, his per centage of gain could be reduced, and his aggregate profits remain the same. All are therefore interested in preventing the accession of those who are not likely to succeed. And in this class of doubtful beginners, are generally those who choose the occupation because they consider it less laborious, and not as degrading as pursuits involving manual labor. Thus many a good blacksmith or carpenter has been converted into a very poor merchant, and earns his living at this business by an amount of drudgery and up-hill toil, which he could not have found in his legitimate pursuit. Fond parents, who fancy that white hands and a well-tied cravat are the signs of gentility, manage to get their sons into a store, and seem to imagine that they must be in the road to fortune and respectability. Not until these mistaken notions are exploded, will the per centage of failures in the dry goods trade be sensibly diminished; and the business fall more exclusively into the hands of those fitted both by nature and application to conquer its difficulties, and obtain its just rewards.

Leading Dry Goods Merchants.—In attempting to illustrate the dry goods trade, as at present conducted, by sketches of representative houses, in conformity with our plan, difficulties originating in various causes, and which we have not found in other pursuits, have beset the undertaking. It is needless to enumerate them; but they exist to such an extent as to render essentially imperfect, in the present edition at least, that in which we most desired perfection. Our article, however, would be too incomplete, did we omit to notice one gentleman, whose early efforts and untiring exertions, have largely contributed to bring the manufactures of cotton and wool in this country to their present excellence and success. We refer to David S. Brown, of Philadelphia. This gentleman has been identified with the commission business, for the sale of domestic fabrics, from its first regular organization as a pursuit, and its humble commencement contrasts so remarkably with its present immense extent and importance, that it is worthy of a recital.

The first agency established in the United States, for the sale of American manufactures, was that of Elijah Waring, in the city of Philadelphia, about the year 1805. Almy and Brown, of Providence, R. I., appointed him their agent, and consigned to him for sale, cotton yarns and threads in great variety; also, as they progressed in the skill of manufacturing, Plaids, Stripes, Checks, Denims, Chambrays, Tickings, &c. A very small store, No. 152 Market Street, was for years the well known warehouse for these articles. In 1812 Samuel Slater had become so extensively successful as a manufacturer, that he also sought Philadelphia for the sale of his goods, at that time by far the largest distributing market in the United States. He established there Jeremiah Brown, as special agent for the disposal of his goods.

It is probable, that at this period there were not as many domestic goods consigned for sale in the whole United States, as are now sold by any two respectable agencies! During the war of 1812 to 1815, manufacturing was entered into in various parts of the Union with great zeal; more especially in the New England States; so that, down to 1816 and 1817, when the great and important invention of the power loom became successfully established, the impetus given to the production of goods was enormous. It is a wonderful reflection, as well as a true exemplification of the cheering progress of our manufactures, that the same fabric, a $\frac{4}{4}$ number fourteen heavy brown sheeting, which sold in 1817 at 32 cents per yard, now sells at 8 cents! and previous to the introduction of the power loom, an inferior fabric could not have been procured for less than 50 cents. The price paid for weaving the same was usually 12 to 15 cents per yard. From brown muslins the progress was magical in the production of various fabrics on the power loom, and those great mills erected at Lowell by the Merrimack Company, commenced an era in the printing of calicoes, which formed a second great epoch in the manufacturing career of the country. The period from 1816 to 1823, introduced to many importing houses, in the various Atlantic cities, a portion of their business in American goods, and several of the largest became sellers of American goods exclusively.

At this time David S. Brown was salesman in the house of his brothers, Jeremiah Brown and Moses Brown, trading under the firm of J. & M. Brown; and the enthusiasm and earnestness manifested by him in the successful introduction of the various beautiful and improved fabrics as they were turned out at the different mills, elicited the special notice and commendation of that veteran manufacturer, Samuel Slater, of Rhode Island. For more than thirty years he has been actively engaged in the distribution of American goods, and to his suggestions the manufacturers have from time to time been indebted for many valuable ideas. He is now the head and founder of the well known house of David S. Brown & Co., consisting of David S. Brown, Robert F. Walsh, and George F. Peabody—a house which is exerting a commanding and favorable influence over all branches of the dry goods trade, not only in Philadelphia, but throughout the country.

John Farnum & Co., Philadelphia, are another of those houses that elevate the mercantile reputation of the city in which they are established. Mr. Farnum, the founder of this house, is one of the oldest manufacturers and commission merchants now in business in the United States. He is a member of the Society of Friends, and a native of Worcester Co., Massachusetts, where he manufactured woolen goods from 1816 to 1822. In the latter year he removed to Providence, R. I., where he was engaged in the domestic commission business until 1835, when he removed to Philadelphia, and established the firm of Farnum, Newhall & Bettle, for the sale of American manufactured goods. In 1843 the style of the firm was changed to Farnum, Newhall & Co., and five years afterwards to John Farnum & Co., and so continues to the present time. They are now the consignees of a number of the principal manufacturers of cotton and woolen goods; and by their uniform observance of the mercantile virtues, have contributed to place the Dry Goods Commission Business in the foremost rank of leading pursuits.

Joseph Ripka, Philadelphia, belongs to that class of staunch, sagacious merchants and manufacturers, who have been identified with the manufacturing interests of this country from an early period, and to whose enterprise and perseverance, those interests are indebted for much of their present vigor and development. In 1816 Joseph Ripka commenced the business of manufacturing cottonades in Poplar Lane, Philadelphia, but so limited were the resources, and so small the demand for the manufactured article, that for some time eight weavers with hand looms were an ample force, and a wheelbarrow was found a sufficiently capacious and expeditious means of conveyance for delivering the goods to tailors and merchants. The superior quality and neat style of his goods, however, rapidly induced a demand, and in 1828 we find his operatives numbering five hundred, employed the greater part of their time. About this period water power was rented at Manayunk, and in 1830 Mr. Ripka erected there his first mill, which, fulfilling Nature's law, has multiplied and increased, until he now owns five mills in Manayunk, and one, solely for spinning, in Chester county. He is now manufacturing, of fancy cottonades and other pantaloon stuffs, nearly three hundred pieces per day, averaging forty yards each, or three million six hundred thousand yards per annum: but so widely and favorably are his manufactures known, that even this large supply is inadequate to the demand.

Thomas & Martin, Philadelphia, are names that have been known and respected by several generations of merchants. This house was founded in 1810 by Thomas, Shreve & Co.; in 1812 the firm became Thomas & Martin, and so has continued to the present time. We doubt whether another firm style unaltered during almost a half century, can be found in Philadelphia, and there are but few in the United States.

Messrs. Thomas & Martin were originally engaged in the importation of East India goods, but when the manufacture of American goods had become successfully established, they were among the earliest to turn their attention to the sale of them. They established the second Domestic Dry Goods Commission House in Philadelphia, and sold the manufactures of the first cotton factory using the power loom, started at Waltham, Massachusetts.

Among the many principal *Importers* of Dry Goods, we have space to refer to but two, and those briefly—E. M. Davis & Co., and Lewis, Brothers & Co., Philadelphia.

E. M. Davis, the founder of the house of E. M. Davis & Co., is a native of Philadelphia, and in 1827 was in the store of H. C. Corbit, then a retailer, at 40 South Second Street. In 1836, after Corbit had embarked in the importation of French silks, Mr. Davis was admitted as partner, under the firm of H. C. Corbit & Co., which continued until 1845, when he disposed of his general interest in the concern to his other partners, remaining however a special partner with them, until the close of 1847. At this period he established the firm of E. M. Davis & Co., now composed of E. M. Davis, Charles W. Wharton, and J. P. Burton, and commenced the business in which they are now engaged in New York and Philadelphia. The peculiarity of their present business is, that all the goods they sell are made to order and imported by themselves, selling none on commission for foreign or American consignors; and consequently having the privilege of rejecting such as are poorly made, they secure a stock of goods free from the imperfections to which a great portion are liable. The test of credit acted upon by this house is "integrity, not monied capital"—and by an adherence to this rule, they have no doubt had the satisfaction of benefiting deserving men, as well as of saving themselves from many losses through fraudulent failures.

Lewis, Brothers & Co., 80 Chestnut Street, are the successors of H. C. Corbit & Co., whom we have above referred to. On the dissolution of the firm of H. C. Corbit & Co., in 1845, Henry C. Corbit, Henry Lewis, Jr., J. F. Cottringer, and E. Perot, established a partnership, under the style of Corbit & Co., which was changed in 1850 to Corbit, Lewis & Co. At that time they occupied the store No. 33 Church Alley, then the most commodious in the city; but their business increased so rapidly, that they afterwards removed to Jayne's new granite stores, Chestnut street. In 1852, by the death of Mr. Corbit, and the consequent expiration of the partnership, the firm was changed to its present style, Lewis, Brothers & Co., now composed of Henry Lewis, Jr., J. F. Cottringer, Joseph W. Lewis, W. H. Lewis, and J. L. Price. They are the agents of a number of the large manufacturers of silks in Europe and are now selling probably a larger amount of goods than was sold a few years since by all the silk importers in Philadelphia.

As a practical illustration of a highly respectable Dry Goods *Jobbing and Importing* house, we will at this time only refer to one of many—Greenway, Brother & Co., 24 Park Place, and 19 Barclay Street, New York. The founder of this house, Mr. Edward M. Greenway, removed from his native place, Abingdon, Virginia, to New York, in 1818, and in 1824 commenced the importation of Foreign Dry Goods. In consequence of ill health he retired from business in 1833, removing to Baltimore, Md., and leaving as successors his two sons, William and John Henry Greenway, who, with other partners, have, since his retirement, composed the firm. Their stock comprises foreign and domestic goods, dress goods, linens, &c., and having facilities for obtaining these goods direct from the best original sources of production, and having availed themselves of the most practicable means of advising buyers of the fact—means within the reach of almost every one, but which very few dry goods jobbers that have come under our notice seem to appreciate, or know how to use—they have attracted to their house a very large circle of customers, whom, by liberality and fairness of dealing, they retain. This house is now among the oldest in their branch of the trade, and inasmuch as they have not left undone those things which they ought to have done—we are glad of their prosperity, and proud of their position in the mercantile world.

Barcroft, Beaver & Co., Philadelphia, are jobbers of dry goods, the simple announcement of whose names will call up pleasant and flattering recollections in the breasts of thousands of traders throughout the Union. Mr. Barcroft, the founder of this house, has been connected with the dry goods business for upwards of forty years, and is now among the best known and most highly respected merchants in the trade.

Before closing this article it may be proper to say a word on a special division of the trade, known as *Fancy Dry Goods.* This is a term comprising a great variety of goods, that but recently constituted a very important and profitable part of the regular dry goods jobber's stock, with the addition of articles that properly belong to the department of fancy goods. It is a link that establishes a brotherhood between the trade in dry goods and many totally different pursuits, and its rapid growth proves its adaptation to the wants of modern commerce. In 1838 Eli S. Burnett, then a young man of twenty-one, established at 44½ N. Fourth Street, Philadelphia, what is believed to have been the first exclusively wholesale fancy dry goods store in the United States. Mr. Burnett continued the business on his individual account, (with the exception of a short period,) until 1846, when he was joined by John W. Sexton, under the firm of Burnett & Sexton. In 1849, by the admission of another partner, the style was changed to Burnett, Sexton & Co, and in 1851 to Sexton, Seal & Swearingen, and so continues to the present time, Mr. Burnett being special partner.

Sexton, Seal & Swearingen are now among the largest and most prosperous concerns in this branch of business. They have recently removed to their new store, 165 Market Street—an elegant six-story building, constructed in accordance with their ideas of the requirements of the business, and certainly most admirably arranged. It is worthy of a description, but in this series of mercantile sketches we have purposely refrained from extended descriptions of buildings, esteeming them of much less importance than integrity, well-selected goods, and superior management. In respect to the first and last of these essentials, Messrs. Sexton, Seal & Swearingen have an excellent reputation; and their stock, consisting of laces, white goods, embroideries, gloves, hosiery, combs, buttons, fancy variety goods, Germantown fancy woolen goods, and a thousand other articles of like nature, not only presents attractions, which buyers who regard their own interests cannot and do not overlook, but is well worthy of a visit and examination by any one desirous of obtaining a clear idea of a first-class Fancy Dry Goods store.

Joseph S. Medara has been identified with the Fancy Dry Goods business, since its establishment as a distinct pursuit in 1838, and by wise management and strict adherence to principle, has placed the house of which he is the founder, in a very desirable position in the mercantile world. In 1846 he associated with him his brother, Paschal H. Medara, and in 1851 Mr. Enos M. Jones—a very superior salesman—who, with himself, now compose the firm of J. S. Medara & Co., 14 N. Third Street, Philadelphia. One of the principles of sound financial policy never forgotten by the senior partner of this house is the investment of surplus capital in such a way as to be a prop and not an injury to the business; and consequently, having abundant means at command and a credit unsurpassed, they can make their purchases both in the markets of Europe and in this country, on such terms as enable them to offer the most satisfactory inducements to their customers. We wish that all the traders of the country were apprized of the facilities possessed by this excellent house.

Lawrence, Stone & Co., Boston and New York, Hoyt, Tillinghast & Co., and M'Curdy, Aldrich & Spencer, New York; Waln, Leaming & Co., and Wood & Erringer, Philadelphia, Domestic Dry Goods Commission Merchants; L. & B. Curtis & Co., 39 Broad Street, New York, Foreign Dry Goods Commission Merchants; Beebe, Morgan & Co., Boston; and Stuart & Brother, Philadelphia, Importers of Dry Goods; Wood, Bacon & Co., Raiguel & Co., and James, Kent, Santee & Co., Philadelphia, Importers and Jobbers, are firms among others, whom it would afford us much satisfaction to notice in a revised edition.

CHAPTER VIII.

ENGRAVING AND ENGRAVERS.

Engraving is the offspring of that natural tendency of the human mind that seeks to embody in a lasting form its thoughts and feelings, or preserve the image of an object loved or admired. The workings of the brain, that find expression in the orator and writer in words, in the musician in music, in the painter in painting, are impressed by the engraver on metals, and the skill and power of his execution are tests of his genius. Inferior to painting in embodying grandeur of conception, engraving is yet its most valuable auxiliary; and as a source of delight to those whose fortunes will not allow them to indulge a love for fine pictures, and as a means of cultivating and diffusing a popular taste for art, its rank among discoveries can be but little lower than that of its twin sister, "the art preservative of arts." It is emphatically an art for the people's delight and instruction, and nobly have they encouraged and patronized it.

The origin of engraving, in its simplest and rudest forms, is remote and obscure. It was certainly anterior to the liberation of the Jews from Egyptian bondage, for in the book of Exodus, we learn that after that event Moses was commanded to "make a plate of pure gold, and grave upon it like the engravings of a signet, holiness to the Lord." He was also commanded to "take two onyx stones and grave on them the names of the children of Israel, according to their birth, with the work of an engraver on stone like the engravings of a signet." Both these passages distinctly imply the practice of gem and seal engraving, and also of engraving on metal plates. But engraving for *printing* purposes is of comparatively recent origin; for no impression from an engraved *plate* has been found with date anterior to 1461. Though the subject is involved in obscurity, and the invention contested by different claimants of different countries, it is believed that Maso Finegnerra, about the year 1460, first practised the art of engraving on metal plates for taking impressions on paper. He was a Florentine goldsmith, and a worker in *niello*, a mode of ornamental engraving usually performed on silver plates. It had been a custom with these *niello* artists, in order to preserve copies of their designs, to fill in the engraved lines with black earth, and run over them a layer of fused sulphur, which took up the earth and formed a species of impression; but Fineguerra, by using a mixture of oil and soot, and substituting paper for sulphur, originated the art of printing engravings and engraving for printing, which, by successive additions and improvements made by its great masters, Martin Shoen and Albert Durer, of Germany, Raimondi, of Italy, and Gerard Audran, of France, rapidly attained a high degree of perfection.

A modern engraving is usually the result of two processes, namely, of direct incision with the graver, and of etching by corrosion. The *graver* or burin, which is the principal instrument in nearly all kinds of engraving, is usually of the form of a quadrangular prism, fitted into a short handle, and is pushed in front of the engraver's hand. The square graver is used in cutting broad lines, and the lozenge-shaped for more delicate ones. In line engraving, in addition to the graver, we have a three-edged pointed instrument, called the *scraper*, for scraping off the burr which is formed by the action of the graver and dry point, or for hollowing out, and the *burnisher*, a round pointed tool used for rubbing out light lines and erasing any scratches which the plate may accidentally have received. The *ruling machine*, an invention of Mr. Wilson Lowry, of London, is used for ruling in with a diamond or hardened steel point, the parallel lines for skies, water, &c., and uniform shading, giving great delicacy and evenness of shade.

Etching is the superaddition of the chemical process of corrosion to drawing, when performed on a plate of copper or steel, over which a substance called *etching ground* is laid. This etching ground is a substance composed of asphaltum, Burgundy pitch and beeswax, and is applied by the aid of heat so as to lie in a thin stratum on the plate. The mode of engraving will be considered subsequently.

The classes into which the arts of engraving may be divided, are three: *engraving in relief, engraving in basso, or sunken lines and points, and surface engraving or lithography.* Relief engraving is chiefly limited to the two styles of wood cuts, in one of which the lines of the design are printed dark on a light ground, and in the other they are left light on a dark printed ground. The latter mode is exceedingly effective for outlines and mathematical drawing, to which it gives a striking relief; it is also much more cheaply executed. Engraving in basso comprises the processes of *line engraving, mezzotinto engraving, engraving in stipple and aquatinta.* Lithography is, perhaps, more properly a distinct art in itself, and will receive special consideration.

Wood Engraving.—This is the most common, and next to gem and seal engraving, the most ancient of engraving processes. A print from a wood cut of St. Christopher, bearing date 1423, has long been in the possession of Earl Spencer, and one dated five years earlier, we believe, has recently been discovered.

The modern mode of engraving on wood is described as follows:—First, blocks of Turkey boxwood, cut across the grain into slices of one inch thick, and planed smooth on the face are selected. Good blocks are characterized by a uniform yellow, plane surface, while the prevalence of red or white colors, or knots or flaws, indicates inferior blocks. Blocks of from six to eight inches square can be procured, but for larger subjects two or more must be joined. An important improvement or revolution in wood engraving, was effected by introducing the use of boxwood blocks, a step which originated in this country. After the block has been selected, the face of it is made smooth by pumice stone and water, and then covered with a moist powder of Bath brick and flake white, which, when dried and brushed, offers a fine white surface to receive the drawing. This is either drawn in pencil on the block, or is transferred from the original drawing by tracing, or by throwing down its ink on the white ground. The white parts are then cut away by the use of small tools called gravers, leaving the dark lines in relief. As in the printing, the dark lines of the drawing should receive the greatest pressure, and the lightest lines the least, the surface of the block is prepared for engraving by lowering slightly, according to a traced outline, the parts on which the lights are to fall. Then the ground is whitened, the drawing on it made, and the engraving executed, conforming in its details to the previous lowering. This lowering, which makes the block complete in itself, is far superior to the method of patching or underlaying, which it is superseding; as the arrangement of underlaying patches to regulate pressure, threw too much on the printer, and was lacking in delicacy of adaptation.

Engraving on wood, though considered one of the most ancient of arts, has been comparatively neglected and slightly esteemed, until within the last twenty years. Within that time, however, a demand has sprung up almost in advance of the facilities for supplying it. The fact that wood cuts can be printed with the utmost ease on the type press—their cheapness and their beauty—their peculiar adaptation for illustrating natural or familiar scenes, combined with the astonishing multiplication of books, magazines, and newspapers, have contributed to call into exercise all the activity of wood engravers, without, however, calling out their highest powers. In fact, this overbearing demand for indifferent styles is rapidly degenerating the art into a mere mechanical trade. This is especially the case in our own country. The utilitarian spirit that seems a constituent of our atmosphere, has penetrated the workshops of our artists. Artists whose time can be constantly and profitably employed, in supplying the current demand for petty subjects, are loth to undertake those great original works, which alone can place the art in the rank to which it is entitled. Certainly we have men among us who are capable of doing much greater things than they have yet done, and when the popular *furore* for cheap illustrations has subsided, we trust to see their capabilities manifested.

We probably cannot better illustrate the progress of the art of Engraving on Wood in America, than by a sketch of one who has grown with its growth, and who has now, we believe, the largest and best regulated business of the kind in this country. We refer to John W. Orr, 75 Nassau street, New York. Mr. Orr seems to have possessed a natural talent for this art, for while an apprentice, he, out of a large number of competitors, at the Fair of the Mechanics' Institute, held at Castle Garden, in 1836, received the silver medal of the Institute, for the best specimen of Wood Engraving. In 1836, having completed his apprenticeship, he settled in Buffalo, where he remained about four years. In 1842 he moved to Albany—while here he was presented with a gold medal by the "N. Y. State Agricultural Society," "for the best specimen of Domestic Animals Engraved on Wood." After Mr. Orr had acquired a wide-spread reputation as an engraver throughout the west, he moved again to New York city in the spring of 1844, and the same year commenced business at his present location. His first work, of any importance, was for "Harper's large Illustrated Bible," and the Frontispieces for "Harper's Illustrated Shakspeare," which were all executed with his own hands. At this time (1844–5) Wood Engraving was not carried on to any great extent in New York. Mr. Orr, appreciating the capabilities of his art, went to work with energy and spirit, and by advertising extensively, engaging the best assistance he could find, and by introducing new and useful inventions possessed by no other establishment, not only accelerated the demand, but placed himself in the front rank of his profession in this country. He has now about thirty hands employed, and among them are some of the best English, French, and German engravers.

One new, peculiar, and original feature adopted by Mr. Orr in his establishment deserves especial mention, inasmuch as it might be introduced into others, even of a different character, with both pecuniary and intellectual profit. He has one man employed expressly as a reader. At a certain hour in the morning he commences reading, so as to be heard by all the men in the office, all that is interesting and instructive in the morning papers, and afterwards takes up some good or standard book. The effect, as we are assured by Mr. Orr, is beneficial to all concerned—the workmen become too much interested in what is being read to enter into discussions and arguments, as is the case in nearly every place where a number of persons are together for a long time, and thus neglect their work. The reading does not interfere with the progress of engraving—except as a good band of music interferes with the marching of a company of soldiers—*keeps them up to time.* Mr. Orr says the reader is the most profitable man in his employ.

William H. Van Ingen, a native of Albany, N. Y., now established at No. 2 North 6th Street, Philadelphia, is a young man of talent, energy, and promise, to whom we look with confidence for efforts which will give a higher character and spirit to the art of Engraving on wood, so boundless in its scope. He received instructions in the art of which he is master in New York, and during his apprenticeship there he twice received the highest award of merit from the American Institute. Leaving New York he established himself in Philadelphia, where, by employing the most competent workmen, and above all, by his own skill, diligence, and attention to orders, he has risen rapidly in his profession, and is gaining daily in the confidence of the public. He now has sole charge of the American Baptist Publication Society's work, and executes many of the engravings in the most popular magazines. The illustrations for the "What Not," a book to be published by Lippincott, Grambo, & Co., have been engraved by him, and one of these, "Nobody's Boy," designed by G. G. White, another young man of great promise, has been pronounced by competent judges a work of true genius. We cordially recommend Mr. Van Ingen to those publishers of the United States, who are desirous of obtaining superior engravings on wood; for by their patronage to him not only will a deserving artist be properly rewarded, but the art itself be improved and elevated.

David Scattergood, Inquirer Building, 57 S. Third Street, E. Rogers, 66 S. Third Street, and William B. Gihon, N. E. cor. 6th and Chestnut, are also well-known Wood Engravers, in Philadelphia.

William Jay Baker, (successor to Baker & Andrew,) 21 School Street, Boston, is one of the leading Engravers on Wood in the New England States. He acquired the knowledge of his art in one of the principal wood engraving establishments in New York; and after spending some time in Portland, selected as the theatre of his operations Boston, inasmuch as it is the head quarters of art and literature in New England. Here he introduced a new style of engraving, and the superiority of his workmanship is evidenced, not only by medals from the Massachusetts Charitable Mechanics' Association, and other societies, but by his selection as engraver of the illustrations in works published by Jewett & Co., Phillips, Sampson, & Co., Ticknor & Co., and other well-known publishers. The illustrations in Mrs. Stowe's popular works were all executed at his establishment. We trust, however, that some of the enterprising publishers of New England will employ Mr. Baker on some large and important work, that will enable him more fully to develop the powers of this useful and beautiful art.

Line Engraving is the technical term for the process of engraving on the two metals commonly employed—copper and steel. It is usual to treat of copper plate and steel engraving separately, but as the tools used and methods employed in both are precisely similar, it is unnecessary; and as steel, on account of its superior durability, has of late years almost entirely superseded copper, we shall limit our description of line engraving to the processes of engraving on steel. The present usual process for line engraving is as follows:—A thin coating of etching ground, which we have before defined, is spread uniformly over the face of the plate by the application of heat. Then an outline of the design is made with a black lead pencil on a piece of transparent paper, and laid with the face downwards on the etching ground; the whole is then passed through a rolling-press, the effect of which is to transfer an impression of the outline to the etching ground. After this the design is completed with the etching needles, which remove the ground from the plate where they pass, and expose it to the action of the acid during the process of biting in. The edges of the plates are then surmounted by a high border of wax closely fitted, and the acid is poured over the whole. For biting soft steel the acid used is powdered corrosive sublimate and alum dissolved in water; for hard steel, nitric and acetic acids, and more recently a mixture of nitrate of silver, and nitrate of mercury. When the action of the acid has been continued long enough, the liquid is poured off, and the operator examines his work carefully. If he finds the desired effect has been produced in the lines drawn, he fills them up with a mixture of asphaltum and turpentine, applied with a camel's hair pencil, or, in technical language, they are *stopped out*. The *biting* or action of the acid is then continued for the deeper shades, which are afterwards stopped out, and so on. When the work is completed the varnish is cleaned off, the plate washed with spirits of turpentine, and any deficiencies remedied with the graver. The plate is then finished with the graver and ruling machine, and by *rebiting*, which last is done by laying a ground upon the surface of the plate so that it shall not penetrate the lines, and then biting as before or washing on the acid where any part is wished darker.

For letter, map and plan engraving, the process is as follows:—The plate being carefully prepared to receive the cutting, is warmed sufficiently to melt white wax, with a thin coating of which it is then covered. The outline of the drawing is then traced upon paper with a black lead pencil, and laid, the pencilled side downward, upon the wax, and the back gently rubbed with the burnisher; by which process the drawing is transferred to the wax. The engraver is thus guided in making the outline of the design on the plate, which he does by means of the dry point penetrating though the wax and marking distinctly on the plate, or by cutting directly through the wax with the graver. The wax is then wiped off and the plate finished with the graver and the point. The plate must be laid on a strong steady table, and a sort of awning or shade of silk paper stretched on a frame be placed near the window, so as to prevent a glare of light from falling upon it.

When the plate has been finished with the graver, the next process is to print it. In *printing* steel engraving, the method pursued is to roll a charged ink roller over the face of the plate, so as to fill its depressions with ink, the plate being heated to facilitate this end. The surplus ink is then wiped from the plane face by rags, and by the palms of the hands. This hand-wiping enables the printer in part to regulate the amount of ink with which the portions of the plate are supplied when printed, and the control over the shade of his proofs thus obtained, nothing but the hand palm has yet sufficed to give; hence, however begriming and distasteful this use of the hands may be, they are likely always to continue as tools for fine printing. When the wiping is completed, the plate is laid on the bed of the press, covered with a sheet of printing paper, and drawn by a crank movement under a cylinder, which subjects it to a pressure so powerful as to force the paper against the ink in all the engraved lines. Then, on lifting the paper from the plate, the ink adheres to the paper surface in ridges and peaks, corresponding to the cut lines and dots of the plate. There is room for a high degree of skill in plate printing, and it is almost as rare to find a good printer as a good engraver. Not only must a first rate printer be versed in all which concerns paper, inks, presses, plates, and their peculiar working, but he must have sufficient artistic appreciation of his subject to give it the best distributed tone of shade. This indispensable adjunct of art, has not received due attention, especially among ourselves, and a reform of this neglect must be achieved before the best American engraved work will compare favorably in proof with the English, French, and Italian products, since their superior printing gives an important vantage ground to their artists of all grades.

Mezzotinto Engraving.—The general principles of the method pursued in executing this manner of engraving, is so clearly exhibited in the anecdote related in connection with the invention, that we cannot do better than relate it here. The origin of the art is attributed to Prince Rupert, and the locality of its conception no other than a military camp. The general is said to have one day, in a moment of listlessness, observed a soldier in the act of polishing an old rusty sword. The corroding rust had been, on some parts of the blade, entirely removed, while on others it remained in all its roughness; other portions had been partially polished. This accident suggested to the reflective mind of the prince, (who had a natural taste for the fine arts, and was curious about its processes,) that a rapid and effective style of engraving might result from roughening the surface of a metal plate so that it should be capable of holding printers' ink, and then remove the roughness again in places, by scraping and burnishing for the half tones and lights of the picture. The expectation was, that when thus finished and the plate covered with printing ink, the ink could readily be wiped away from the smooth lights, while it would cling to the rough darks; thus furnishing a pictorial impression on paper placed over it, and passed through a copper plate press. Accordingly he procured a roller, covered with multitudes of small steel points inserted all round it, points outwards, and by means of a handle at each end, passed it backward and forward over a plate of copper, rolling it in every direction with moderate pressure, until every part of the surface of the plate was punctured with small dots. The matted surface thus obtained acquired the name of the *ground.* The outline of the picture being next sketched with delicacy upon this ground, by means of the blunt point of a burnisher, the middle tints were then produced by rubbing down and scraping, and the pure whites and high lights by burnishing, till the picture was completed. The experiment was successful, and the new method at once took a permanent place among the arts, under the title of *Mezzotinto* engraving—a compound term, signifying in English *half-tint,* and was so called from the subdued softness of the effect.

For laying mezzotinto grounds, the use of the roller was speedily abandoned, because no way could be contrived for sharpening the points when once dulled or broken out. The cradle tool or *rocker* was then substituted, which has continued in use for this purpose ever since. It consists of a piece of steel formed like a chisel, two inches wide, set in a handle, grooved all over one side with lines parallel to its length, close along side each other, and of equal depth. These form a saw-like edge of teeth when the tool is sharpened off at the end to a bevel, and being ground to a curve, can be rocked on the plate without digging in the corners, when held nearly upright, which is the right position for use.

To lay the ground, guide lines are drawn with a pencil of charcoal across the plate, parallel to each other, and not quite as wide apart as the breadth of the tool. The cradle tool is then rocked across the polished plate, advancing slowly, and by the swing of the hand stopping as near as practicable to the line, right and left. When all the spaces in one direction have thus been gone through, draw fresh parallel lines in another direction in like manner, and proceed on till the plate is fully dotted black, avoiding as much as possible to repeat exactly the same direction.

Having got your outline on this ground, either by sketching it with a burnisher, aided by division squares, or by transferring an outline drawing to the plate by means of a roller press; then scrape away the ground throughout the lights and middle tints, more or less, according to the degree of light required, and afterwards burnish where pure white is wanted. The scraper used for this purpose is a simple band of steel, three-eighths of an inch wide, and not quite thin enough to spring or bend in using, sharpened lancet-like towards the end where it is applied to the plate, both edges being used. They have no handles, and are four or five inches long. A correct judgment can be formed of the plate by occasionally obtaining proofs during progress.

Formerly, when copper was the only metal used for the manufacture of engravers' plates, this style was employed chiefly on large and important compositions, the impressions from which would bear a high price, the limitation to the number of prints from such soft metal, rendering this necessary to cover the cost. Richard Earlom's exquisitely beautiful plates belong to that period. But the introduction of decarbonized steel plates as a material for engravers' use, by Henry Warren, about thirty-five years ago, opened a wider field to this branch of art, and the attainment of its perfection in the hands of Samuel Cousins. It is very seldom that mezzotinto is executed now without an admixture of both stipple and line engraving, which add to its force and durability. Mezzotintos thus managed, yield from four to seven thousand impressions. The practice of this style in Europe, has been mainly confined to France and England, but chiefly to the latter. Many of the large French plates, attributed to that style, are done in *aquatinta*, a totally different method. In America, the early history of the art is inseparably associated with the name of JOHN SARTAIN, of Philadelphia, who first introduced it here about a quarter of a century ago, during more than half of which period he was alone in the practice. In his hands it underwent a change in its application, and consequently in its methods, in adapting it to the production of small book embellishments for which it had not been used before. From the broad effects of large framing prints, it was forced down to the expression of the most minute details, on the diminutive scale of pictorial books; and we count by hundreds the steel plates engraved in this style during the period referred to, all the product of one prolific hand. The facility of its execution, its inexpensiveness, the richness and softness of its effects, all tended to extend its popularity; and its use, doubtless, hastened the diffusion of that rapidly growing taste for prints in this country, everywhere observable. Of the numerous large plates in the mixed manner by Sartain, probably the most important is that entitled the "County Election," just published. It contains multitudes of figures, full of expression and character in elaborate detail. Its success was such that, immediately on its completion, the plate was purchased from the original proprietor at an enormous advance on its cost, and was then published simultaneously in the principal cities of Europe and America. The engraver of the fine plate issued by the Art Union for 1854, entitled "Clear the Track," is a son of Mr. Sartain above referred to.

Engraving in stipple is performed with a graver or by etching, which is so managed as to produce the tints by small dots instead of lines, as in the ordinary method. It is a slow and very costly mode of engraving.

Aquatinta engraving has for its object the imitation of drawings made with India ink, bistre, sepia, &c. It is but little used in this country, for though it is well enough adapted for slight subjects generally, and for large and coarse representations, it fails where minute and accurate detail is required.

We frequently hear it said that the arts of engraving are purely ornamental, of no practical utility, and, consequently, that none but artists are interested in their improvement or advancement. It may be proper in this place to disabuse the public mind of this erroneous idea, by considering some of the practical purposes to which the processes we have described are applied.

We presume none are so radical in their utilitarian notions as to deny that a bank note is frequently both useful and valuable, and yet it would not be overstepping truth to say that a bank note is indebted for its value as much to the skill of the engraver as to the soundness of the institution that issues it. If it could be easily imitated, the opportunity would not be neglected, and as a consequence, it would soon become valueless as currency. In no branch of engraving is the progress made in the art within the present century more manifest than in the engraving of bank notes. The best engravers in this country are now engaged in this department, and if we examine some of the latest specimens executed by the eminent houses engaged in the business, whom we shall presently notice, it would seem that further improvement could not reasonably be expected.

Bank note engraving is especially interesting to us as Americans, for in no other country does the art at all approximate the degree of perfection attained by our countrymen, and to American ingenuity it is indebted for the invention of machines, which, while they add to its beauty, secure it from imitation. If we compare a Bank of England note, for instance, with one executed by our bank note engravers, we are reminded of the difference between wood engraving and steel engraving, or rather we are assured of the inferiority of engraving in the past century compared with that of the present. Having no confidence in the engraving of their notes as a preventative against fraud, the directors of the Bank of England have adopted the rule of never issuing the same note twice, and so strictly is the rule observed, that a note merely handed to a person, who, before leaving the bank, gets it exchanged for other notes, is at once cancelled and never reissued.

BANK NOTE ENGRAVING.—Bank note engraving in this country may be said to have entered upon the progressive stage of its career, about the time the first charter of the Bank of the United States expired. Previous to the close of the first Bank of the United States, the charter of which expired in 1811, there were but few banks in existence, and the whole engraving on a bank plate was done by a single individual, who in many instances also printed the plate. As it was almost certain that the first Bank of the United States would not be rechartered, and that consequently a greatly increased demand for bank plates would result, efforts were made to bring together several individuals, each of whom should do that part of the engraving to which his capacity was best adapted, and thereby throw greater impediments in the way of counterfeiters than had previously existed. Whilst this was in contemplation, Mr. Abel Brewster patented what were denominated punched dies, and a partnership was formed in Philadelphia, under the firm of Murray, Draper, Fairman, Brewster & Co., and these punched dies, which would be of little avail now against counterfeiting, were then deemed, and in fact continued to be, a safeguard against imitation for many years. These dies were transferred from flat pieces on the plates by repeated blows of a screw hand press.

In 1816, Mr. Asa Spencer invented a lathe producing geometrical and concentric lines, and at the same time a method was introduced of transferring engravings of all kinds to steel rollers, which being case hardened, could then be impressed on any number of plates. This enabled engravers to bestow much more time on the execution of the engraving of the flat piece, and led to the excellence of the work which is so obvious on the bank notes of the present day.

Mr. Jacob Perkins, of Newburyport, had introduced on the notes of the State of Massachusetts, work, in itself, not difficult of imitation, but the multiplying of the denomination many times, rendered the time necessary to accomplish it a considerable bar against counterfeiting.

The great leading design in the engraving of bank plates, is to prevent fraudulent imitation. To accomplish this, the means principally relied on are skill in the execution of the work generally, geometrical lathe dies, and printing the denomination of the notes, both on face and back, in large red letters or figures. The firms in the business, by the use of capital, the division of labor, the employment of the best talent in each branch, and the improvement of machinery, have brought the art to its present state.

The geometrical lathe dies are made by means of a highly complicated machine, introduced by Mr. Spencer, added to by Mr. Durand, and improved by Mr. Tichenor. This machine has been justly compared, in its power of presenting an infinite diversity of patterns, to the far famed scientific toy, the kaleidoscope. It possesses this peculiarity of the kaleidoscope, that the turning of a screw, like a change in the position of Sir David Brewster's instrument, gives rise to an entirely new pattern, such as has never been seen before, and may never recur again. This pattern, however, may be preserved and perpetuated by the transferring process. The forms produced by this machine, which is called the geometric lathe, will be found, on inspection, to contain an intricate and mazy concretion of lines and dots, which, to the pratised eye, constitutes the best practicable means of identification. And to these forms is given the effect of a beautiful combination of copper plate and letter press printing, by making the lines which in one scroll or block are white, in the next black, and so alternating through the whole series, in which the figures themselves are, except in the shading, precisely alike.

The engraving of a bank note is divided between vignettes, heads, square letters and writing, each of these being separate departments, executed by different individuals, who devote their attention to each branch. In addition to the engraving, each vignette is separately designed by a draughtsman.

The process of making a bank note is briefly as follows :—The drawing of each vignette is engraved on a small piece of steel, called a flat piece. It is then hardened by exposure to heat, and then taken up on a roll of soft steel by means of heavy pressure in a machine adapted to the purpose. The roll is then hardened, and the picture is transferred from it, by pressure, on the plate on which the bank note is to be made. Heads, and lathe work dies are cut or engraved also on flat pieces, hardened and transferred in the same way. The plate is then ready for the title and writing, which are cut upon it. It then goes to be printed. The printing is done in the usual style of steel or copper plate printing, but with more care.

It may be proper to remark, that perhaps the great danger to the public is not from the counterfeiting, or complete copying of a note, which, from the time, expense, valuable machinery, great skill, and the number of persons to be employed, is extremely difficult, but from the alteration of a less denomination to a larger, or of the bill of a broken bank to that of a good one, by removing the ink by means of acids, and placing in a new title, or denomination, or by skillfully pasting the new denomination or title over the old one.

The greatest aid to the operations of counterfeiters, however, is that when a bank winds up or fails, its plates, instead of being destroyed or carefully disposed of, are allowed to fall into the hands of improper persons, and are either printed, after having been slightly altered, or are cut up in pieces, so as not to injure the work, and then hardened and used in the manufacture of new plates.

The geometrical lathe work, and the red letter printing, have been more extensively used and introduced by the firms of Bald, Adams & Co., of N. Y., and Bald, Cousland & Co., of Philadelphia. Mr. Geo. Tichenor, of whom we have spoken, is in their employ, as head of the transferring department, and has, under their auspices, been engaged in perfecting the lathe work, and is, from time to time, rendering it more and more beautiful and useful.

The firm of Toppan, Carpenter & Co., Bank Note Engravers, was originated by the present senior partner, Charles Toppan. Mr. Toppan was a pupil of the celebrated Colonel Fairman, (one of the originators of the firm of Murray, Draper & Fairman,) and owing to his superior skill as an artist, was selected by Messrs. Fairman & Perkins to accompany them to England, about the year 1820, with a view to aid them in the establishment of the business of bank note engraving in the city of London. This was successfully accomplished, and their successors (including a part of the family of the late Jacob Perkins) are at this day actively engaged in conducting the largest bank note engraving business in all Europe. After remaining several years in London, Mr. Toppan returned home, and shortly after commenced the business of bank note engraving and printing in the city of Philadelphia, where his talent and skill soon attracted the attention of banking institutions, and it was not long before the increase of business rendered it necessary to increase the facilities for the execution of orders; and the dissolution about this time of the firm of the successors of Murray, Draper, Fairman & Co., led to the association with Mr. Toppan of Mr. John Draper, the then senior partner of that firm. The business was now conducted under the firm of Draper, Toppan & Co. in Philadelphia and New York, and continued to increase steadily until it was found necessary to procure further aid in its management, and Mr. S. H. Carpenter, (also a pupil of Col. Fairman,) was admitted as a partner. This firm was selected to engrave all the plates for the late Bank of the United States, and continued to do their entire business up to the close of the bank. Mr. Draper having retired in 1842, the name and style of the firm was changed to Toppan, Carpenter & Co., and the continued increase of business, and consequent necessity for securing the best talent of the country, in the different departments, to meet its demands, led to the admission, successively, as partners, of Mr. H. E. Saulnier, a machinist of great skill, and Mr. W. C. Smillie, an artist of superior standing in his branch of the fine arts. The firm had now attained a position which was second to none in the country as to character and amount of business done, but with a desire to add still greater strength and efficiency to it, an arrangement was made about five years since, by which Mr. John W. Casilear, (a gentleman who had long stood confessedly at the head of his profession as a designer and engraver,) was received into the firm as a partner. Since that time this firm has been so fortunate as to secure the *exclusive* services of Mr. F. O. C. Darley, in making designs for bank note vignettes, and he has furnished a vast variety of designs, embracing commerce, agriculture, manufactures, mechanics, allegory and miscellaneous, all of which possess an originality, beauty, truthfulness to nature, and force of character heretofore unequalled in this country, and such as, it is believed, no artist of any country could excel. This firm have now established branches of their business at Boston, Cincinnati and Montreal, and with their valuable machinery, immense stock of dies of every description, and talent in every department of their business at their principal offices at Philadelphia and New York, they have the ability to execute orders with great expedition, and combining the greatest degree of security against counterfeiting with the highest possible finish as works of art.

Seal Engraving.—After Bank Note Engraving the engraving of seals, stamps, &c., is entitled to very high consideration in point of utility. From time immemorial corporate bodies, civil and ecclesiastic, have authenticated their public and special documents by a seal, and with the advance in civilization and increase of commercial instruments, private individuals have adopted it as a protection against fraud or forgeries. A great deal of ingenuity has been exhibited of late years in the construction of this indispensable instrument in combination with a seal press. One of the most recent inventions of this kind, as well as the neatest and cheapest that has come under our notice, is that now manufactured by C. F. HALL, Seal Engraver, Cincinnati, Ohio, whose handiwork we are glad to learn is very generally appreciated by our prominent officials, and by business men in general throughout the country, as it deserves to be, for no one of our countrymen has done more to elevate the taste for a superior class of work in seal engraving. This press was invented in 1848, by E. P. Cranch, Esq., (son of Hon. Judge Cranch, of Washington, D. C.,) and James Foster, Jr., both of Cincinnati, and was known for some time as the "*Percussion Seal Press.*" It was never fully appreciated by the public, however, until 1851, when the attention of Mr. Hall was directed to it, and he immediately made the necessary arrangements for manufacturing the presses extensively, and took the proper means to introduce them to the notice of the public. For some months they were called "Evens' Percussion," but Mr. Hall having made an improvement, and for other good and sufficient reasons, speedily changed the title to the more euphonious one of "HALL'S PERFECTED PERCUSSION," by which they are now known to the world.

The power applied to this press is a simple blow of the hand, which by experiment has been found to equal the dead weight of one ton. The effect is a chaste and effective impression, which may be used as a seal for the authentication of documents, a protection against forgery of commercial instruments, or as an economical means of advertising business cards. Mr. Hall has now a large force engaged in engraving seals to order, and adjusting them to this press, which he sells complete, we believe, for $5 each, and we commend the matter to the attention of business men as a means by which their interests may be advanced.

Die Sinking.—This branch of engraving is similar in effect and manner of execution to seal engraving.

The original design is either a modelled representation of what is required or a drawing. When a high relief is wanted, a model is almost indispensable, the necessity for which will readily be seen, by examining the Napoleon medals, medals of the London World's Fair, by Wyon, or those struck in this country in commemoration of events, or in honor of some individual. In copper and steel engraving, the drawing in all its details may be copied on the plate, and retained until it is finished. In die sinking, however perfect the drawing may be made on the material used, (brass or steel), but little can be retained beyond the general outline—the drawing and the various depths, depend entirely on the skill and talent of the artist, aided by proof impressions taken during progress. Some have the power of seeing a sunk figure apparently raised, an illusion which opticians may explain, but few visions ever obtain this advantage.

Every description of tools is brought into requisition in this business, the graver, chisels, punches and chasers' tools. In many pieces of work tools must be made to suit as it proceeds. Legends, inscriptions, &c., are always punched.

The demand for die sinking is increasing rapidly. Coins and medals call for the most finished artists. Silversmiths, jewelers, bookbinders, coach trimmers, &c., demand their services; and no description of embossed work can be had without their previous aid. All are dependant on this art.

France, Germany and England, far excel us in the higher branches of this art, but this may be attributed rather to the absence of demand for the finest work than to the inferiority of our artists. In fact, we have artists among us who need only the spur of demand to raise the art in this country to a position as high as in the countries mentioned. In illustration of this, we refer to J. & C. E. Maas, 80½ Walnut street, Philadelphia, whose abilities are cheerfully acknowledged by artists in all branches, and whose judgment on works of art is eagerly sought after and recognized as authority. Mr. J. Maas, originally in a bank note office, has been engaged in the various branches of engraving for a number of years. Mr. C. E. Maas is a practical designer and engraver on wood. His engravings have been noticed for their peculiar, distinct and determined style—showing a perfect confidence in the effects his graver would produce. For this he was selected as teacher of the art in the Philadelphia School of Design. This firm is now actively engaged upon all the various branches of Die Sinking, and its kindred arts.

A very ingenious machine of French origin, is in use at the United States Mint, called a Portrait Lathe. This reduces and engraves a perfect copy of the model, requiring merely the finish of the artist in the sharper parts. Good models are required to produce good work, as judgment is not called into use. It may be said of this business generally, that an advance in the beautiful art of modelling will be a certain forerunner to the perfection of Die Sinking.

Calico Engraving has long been an important art in Europe, and with the progress of our manufactures, is daily growing into importance in the United States. Some of the Lancashire firms in England, expend as much as $25,000 a year in designing and engraving new patterns. The process of engraving calico cylinders has been adverted to in the previous article on the Dry Goods Trade, and need not be repeated here. The firm that first established this art in the United States was Mason & Baldwin, in Philadelphia; and the one now most widely known in this business, is also a Philadelphia firm, E. D. MARSHALL & Co., 6 La Grange Place. Employing the ablest designers, they are in receipt of orders not only from Pennsylvania, but from New York and the New England States. Their business, however, embraces not only the engraving of cylinders for printing calicoes and satinets, but for embossing paper hangings and bookbinder's muslin.

LITHOGRAPHY. This art, which now occupies a very important place among the industrial pursuits of the age, owes its origin entirely to accident, and like one of its more ancient sister arts, is of German invention.

The calcareous stone which serves the purpose of Lithography, is found in great abundance in Bavaria, more especially in the environs of Munich, where the inhabitants use it for paving, steps, tombstones, &c., and a portion of it they use as slate, for it is occasionally found in thin pieces or sheets, similar to slate. It is also susceptible of receiving a finer polish even than marble. The manner in which Lithography was first discovered is as follows. A musician, who was also a composer of music, of the name of Senefelder, employed in copying music for the theatre of Munich, was in the habit of using pieces of this kind of stone on which to draft or sketch his compositions, previous to committing them to paper, during which, by mere chance, he discovered the peculiar qualities which adapted it to printing purposes. In July, 1796, as a memorandum for his mother, he wrote on a piece of this stone in pencil a note of some clothes which a washerwoman was about taking, but inadvertently dropped it into a slop bucket. Hastily withdrawing it, fearful it should become effaced, to his astonishment he observed that the writing had become charged with a strong coating of grease, leaving at the same time the blank portions perfectly unaffected. This aroused his resolution to comprehend, if possible, the phenomenon, and with this view he prosecuted experiments, and repeatedly obtaining the same results, he persevered, until he was enabled to select the materials required to compose crayon possessing the necessary properties, as well as the appropriate acids to affirm that crayon on the stone, to render it capable of transmitting the impressions on paper. Having fully accomplished this, the next difficulty was to invent and construct a printing press suitable to this novel art. Here again by dint of perseverance, further experiments, and continued exertions, he succeeded in producing impressions in all the various styles of Lithography, sufficiently good to establish the validity of his invention, and although there is now an immense difference between them and the lithographic productions of the present day, still the inventor demonstrated, through his essays, almost all the various "*modus operandi*" that practice and experience have since perfected.

Senefelder, however, did not derive any pecuniary advantages from his invention, although very eligible offers were made him by capitalists, with a view of bringing this new art into ostensible use. Such was his infatuation with his discovery, that he pertinaciously continued sole possessor of this secret, and followed up his operations entirely alone; but the time finally arrived when he could no longer proceed without some assistance in accomplishing certain manipulations in this new art; in this way the secret was gradually revealed. Several establishments were almost simultaneously formed in Germany and England, but, strange as it may appear, Napoleon, who then governed France, would not permit its introduction into his empire, giving as a reason that it was a dangerous art, inasmuch as it was calculated to facilitate the counterfeiting of manuscripts, bank notes, and other documents of import—and consequently Lithography was not introduced into France until the restoration of the Bourbons to the throne.

The lithographic stone, to which we have alluded, possesses in a very high degree calcareous properties more or less similar to limestone, and absorbs to a certain extent the oily substances that are committed to it to give the drawings sufficient adhesiveness to resist the friction consequent upon using the printing ink. The two principal agents used for making drawings, writings, &c., on stone, are called lithographic chalk and lithographic ink. They are composed of tallow, virgin wax, soap, shellac, and enough lamp black to impart a color to the mass. These are incorporated by a peculiar process of burning, in a closely covered saucepan over a fire, and the whole is ultimately cast into a mould, and receives the form calculated to fit it for use. The ingredients are the same in the chalk and the ink, but the proportions are varied. The chalk is used as it comes from the mould, in a dry state; but the ink is dissolved by rubbing, like India ink, in water, and is used in a pen or camel-hair pencil. It is the presence of soap in this greasy material, which renders it soluble in water.

The different styles in lithography consist in *linear and crayon drawings, transfers on the stone from steel or copper-plate engravings, woodcuts, or from lithographic drawings themselves.*

The linear or transferred drawings are executed on the stone only after the surface has been polished. Over these drawings—and covering, in fact, the surface of the stone—a preparation of gum arabic dissolved in water, with the addition of a certain quantity of nitric acid, is poured, to neutralize the alkali or soap in the chalk, and render it insoluble in water. This preparation having been left on but a few seconds, is then washed off with fresh water, and the drawing itself thoroughly sponged over with spirits of turpentine, until it apparently disappears, thus leaving only the grease on the surface of the stone. Finally the turpentine is washed off with fresh water, and the stone is wiped with a cloth, but before the moisture, thus occasioned to the stone, evaporates, the printer works his roller over the drawing and charges it, as it is called, with lithographic printing ink. All parts of the stone that are impregnated with the chalk or crayon, with which the drawing was executed, become fed with the printers' ink, and the drawing resumes the appearance it possessed previous to its being washed out with turpentine, but the balance of the stone, being wet, will not even be soiled, from the antipathy of oil and water. The stone is then ready for general printing. The impression is produced by a strong friction peculiar to the lithographic press, the paper being previously damped, more or less, in the same manner as in other modes of printing.

At each impression the printer takes, he renews the charge with the printing ink, always observing to damp the stone with a wet sponge, just previous to his rolling it in, for should the stone be left dry, the whole surface would become covered with the printer's ink: the moistening used in no way affects the drawing, which consists in a greasy substance, but only those parts of the stone that are not impregnated with it, consequently the printing ink with which the roller is charged, and which is also a greasy substance, discharges itself in certain quantities, or in other terms adheres to the parts of the stone already impregnated with grease, and supplies the drawing.

The two principal agents, therefore, of lithography, are grease and water. The latter is employed to counteract and limit the grease to its proper limits, which constitutes the drawing.

The crayon drawings are printed in precisely a similar manner, but the surface of the stone, instead of being polished is grained, by rubbing one stone on another, between which a coat of very fine sand, moistened, must be kept. The stone thus grained enables the artist to produce the different degrees of tone necessary to the effect of his drawing, for the crayon covers only the surface of the grains of the stone, the interstices between remaining intact, leave to the drawing a transparency, which the artist can modify at his pleasure, by charging in accordance with crayon, those parts of his drawing that require more or less tone.

Engraving on stone is produced in a manner similar to engraving on copper. The surface of the stone must be polished, and before used, a coat of gum arabic and nitric acid combined placed on it, and left for a few seconds. The stone is then covered with the powder of red chalk or lamp black, in order that the engraver may more readily perceive the progress of his work. When the engraving is finished, the printer covers the whole surface of the stone with an ink made for that purpose, and carefully rubbing this ink into all the lines constituting the engraving, the whole becomes in this manner filled with the grease, after which the printer's ink can be applied. It must however be observed, that in this case the printer uses a tampon or dauber, in lieu of a roller, but the impressions are produced in the same manner and on similar printing-presses as heretofore alluded to.

In regard to *the drawings in color*, the same method is again resorted to, excepting that each portion of the drawing forming a different color, must be executed on a separate stone; but during the printing the whole is finally combined on the same sheet of paper, forming eventually a work that looks quite like a painting. It is here necessary to observe, that each color should be strictly adjusted in its place to insure success, and the more readily to obtain this result, iron frames, made expressly, are used, in the centre of which the stone is first secured; then at a given point, through the medium of particular screws, this iron frame, to which little steel points are attached as indicators, on which the printer adjusts his paper, and being careful to prick the paper each time in the same place for each impression, together with the stone being suitably and accurately placed, all the colors can in this way be printed in their appropriate places.

An experienced artist, in this branch of Lithography, can produce drawings equal in brilliancy of color to oil paintings, and at the same time he can employ an unlimited number of colors, should the drawing require it.

For this style of impression the paper must have a glossy surface, and must be used dry.

It now remains for us to treat of *transfers on stone*, a branch that has greatly augmented and enriched the resources of Lithography for several years past, and which is destined to become its most extensive and useful auxiliary, owing to its incalculable advantages in extending to any amount the number of works, and the unaccountable number of impressions that may be produced therefrom.

This operation consists in taking, in the first instance, a good impression from any engraving on steel, copper or wood, and even from a form of character with a composed ink, and on paper prepared for the purpose. This impression, after being lightly moistened, is placed on a polished stone, and a pressure passed over it several successive times, taking care that it be not allowed to deviate from its pristine position during this time. This pressure leaves the ink from the engraving indelibly impressed on the lithographic stone, the paper having been previously prepared to facilitate the departure of the ink from it to the stone. This paper is then detached by moistening the back, and the whole impression is afterwards seen on the stone, clear of all else, and by renewing this transfer as often as it becomes exhausted by printing, the number of copies that can be obtained is unlimited. The mode of printing from this transfer is much the same as that pursued in other drawings on stone. A sheet of writing, or a drawing of any kind, executed on the prepared paper with the transfer ink, can be reproduced in a similar manner.

The transfers from *old* engravings or impressions of any kind, has not, up to this period, met with much success, owing to the ink originally used having, in the lapse of time, become so dry, that as no substance remains wherewith to found the basis on the stone, the impression cannot be obtained. Various experiments have been made with the view of feeding the old engraving, such as preparing the paper on which it exists, for the purpose of obtaining from it a transfer, and also by charging the old engraving itself, without soiling the paper, with a coating of ink of a quality capable of being transferred; but so far all to little purpose, as the result has as yet proved very unsatisfactory. At some future day, however, it may be fully accomplished, for Lithography, as well as all other modern arts, is daily progressing towards perfection.

Lithography is generally executed on stone, yet zinc has of late years occasionally been employed in lieu of stone, and for some things, such as engravings and linear drawings, it may be used effectively.

Leading Lithographers.—In 1827 William S. Pendleton established in Boston the first lithographic establishment in the United States. He imported from Europe artists and materials for the business, and was able to produce portraits, music titles, and other beautiful specimens of the art, with great facility and correctness. The concern seems to have started at once upon the successful career which has since distinguished it—a result unusual in new undertakings. On the retirement of Mr. Pendleton the establishment passed into the hands of Thomas Moore, and from him to B. W. Thayer. About twelve months since S. W. CHANDLER & BROTHER purchased it, and are now prosecuting the business at 204 Washington Street, Boston, with great energy and success. In the higher departments of the art, as portraits —a branch to which they have given particular attention—they have been very successful. Maps, which furnish so large a supply of work to the lithographic press, plans of machinery, locomotives, views of public buildings, titles, and every description of labels, are executed by them in a very superior manner.

Messrs. Chandler & Brother, however, have not confined their business solely to Lithography, but have widened it to embrace the kindred arts of engraving and designing on copper, steel, and wood. We are glad to learn that the first lithographic establishment in the United States is in the hands of men who are energetic in extending the capabilities of the art, and manifest an interest in its advance and improvement.

The second lithographic establishment in the United States was attempted in Philadelphia by Messrs. Kennedy & Lucas, in 1828, but owing to the scarcity of practical printers, soon ceased to exist. The third was started almost at the same time, also in Philadelphia, by Messrs. John Pendleton, Kearney & Childs, who employed as draughtsmen Rembrandt Peale, a justly celebrated portrait painter, and Mr. Swett, together with Mr. C. Blonde, as printer. This firm, however, was soon dissolved, Mr. Pendleton removing to New York, where he founded the first establishment in that city, and the fourth in the United States. The Philadelphia establishment was continued by Mr. C. J. Childs, in company with Mr. H. Inman, (also a painter of great celebrity,) for about two years, when Mr. Inman transferred his interests to Mr. Lehman, which created the firm of Childs & Lehman, having as draughtsmen A. Newsam, Geo. Lehman, Geo. Becker, and as printer, P. S. Duval. Mr. Childs retired from business in 1834, and the establishment passed into the hands of Messrs. Lehman & Duval, who employed the same draughtsmen. This firm was in operation until 1836, when Mr. Lehman retired, leaving Mr. P. S. Duval sole proprietor.

In the same year Mr. John Collins established the concern at present owned by Thomas Sinclair & Co., 101 Chestnut Street, now among the principal Lithographers in Philadelphia.

In 1834 Mr. Duval, on becoming proprietor of his present establishment, made every effort to increase the demand for the productions of his art, which previously had not furnished employment to more than two presses in any establishment, and to this end he published several periodicals, with lithographed illustrations. As these works had considerable circulation, they brought the art to the notice of the public, and made known its utility and capacity. The government of the United States became one of its patrons by intrusting to it the illustrations of numerous reports of expeditions sent out to explore its vast domain, and as these reports were generally accompanied by maps, views, and subjects of natural history and botany, they furnished a vast amount of work for the lithographic press. Mr. Duval has always obtained a large portion of this work, and has at this time a large contract on hand to furnish the illustrations accompanying the report of Lieut. Gibbon on the Amazon River, and also those for Lieut. Gilles' Astronomical expedition to Brazil.

Another source from which this art receives a great supply of work is in the printing of copper plate engravings transferred to stone, as a very large proportion of all the maps now published in this country are printed by the lithographic press. The method of doing this has already been described, but as transferring may be considered an art in itself not universally understood, even by Lithographers, it is proper to mention the name of Mr. F. Borquin, who first introduced it into Mr. Duval's establishment, and who to this day has but few if any equals. The rapid increase of the business will be at once perceived, when we state that Mr. Duval now runs thirty-four presses, and employs from seventy to eighty hands constantly, besides furnishing work to a hundred and sometimes one hundred and fifty print colorists. This immense increase suggested to Mr. Duval in 1848 the idea of adapting steam power to his lithographic presses, which he succeeded in doing, and consequently was the first to introduce this important improvement in the business. He has now about twenty-four of his presses working by steam, and his establishment—the largest in the country—is a model of perfect and successful operation.

HATCH & SEVERYN, 140 Fulton Street, commenced the business of Lithographic Engraving and Printing some two years ago in New York, and from their antecedents and by their achievements, give promise of taking rank among the most extensive and successful Lithographers in the United States. One of the partners, George W. Hatch, Jr., is the son of George W. Hatch, Sr., (who has long occupied a prominent position among our most skilful Bank Note Engravers,) and may reasonably be presumed to have inherited a genius for the art of Engraving, which he has since assiduously cultivated. The other partner, Charles Severyn, is a designer, and has acquired considerable reputation, especially for his skill in grouping figures. Among the many superior prints engraved by this firm, "The Landing of the Japan Expedition" is especially worthy of mention, for though designed from the imagination, its accuracy, as testified to by Bayard Taylor—a prominent character in that expedition—is as noteworthy as the beauty of the execution.

The application of the art to ornamental uses has, however, engrossed but little of Messrs. Hatch & Severyn's attention. Its adaptation to practical objects and the wants of commercial men has been their chief study, and in which they have manifested especially their skill and talent. We have seen blank checks, notes, bills, stock certificates engraved by them in a style, which, to an unpractised eye, would seem fully equal to the work of a Bank Note Engraver on steel, and certainly entitled to preference over it in ordinary cases, when the difference of cost is taken into consideration. We commend Messrs. Hatch & Severyn to all patrons of Lithography.

In Baltimore A. HOEN & Co., 75½ S. Second Street; and in Cincinnati MIDDLETON, WALLACE & Co., and KLAUPRECH & MENZEL, are the leading Lithographers.

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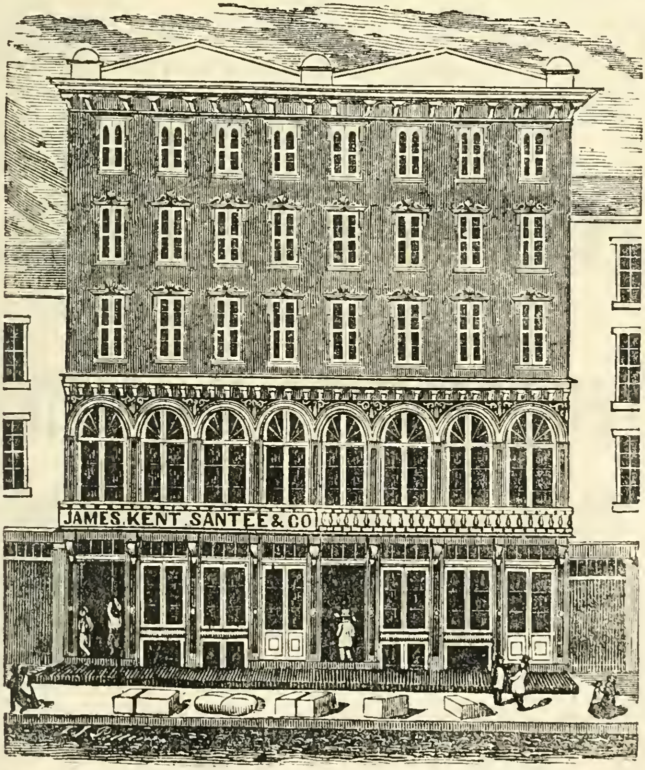

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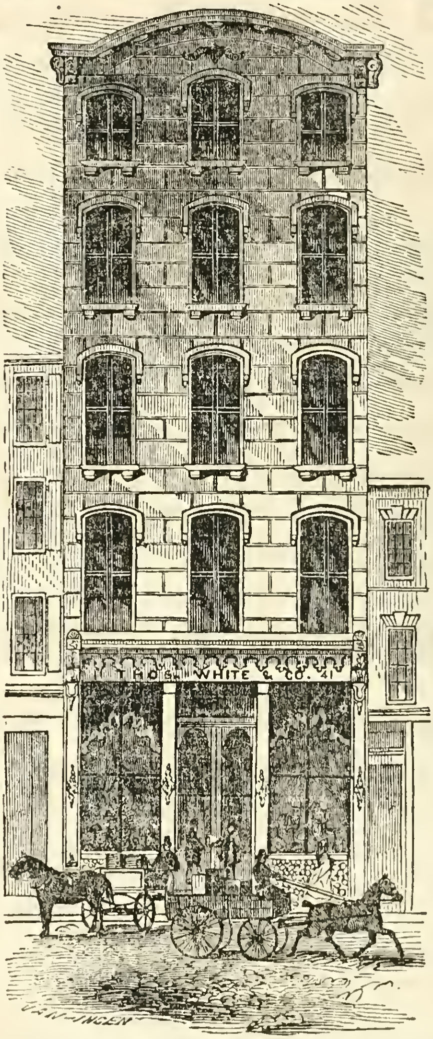

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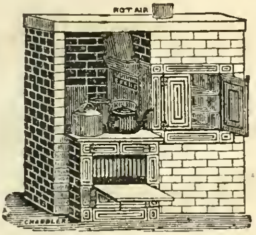

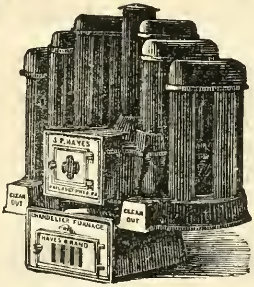

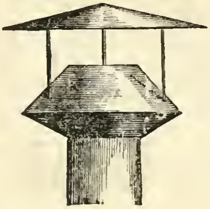

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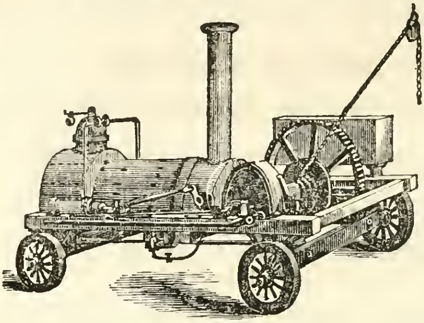

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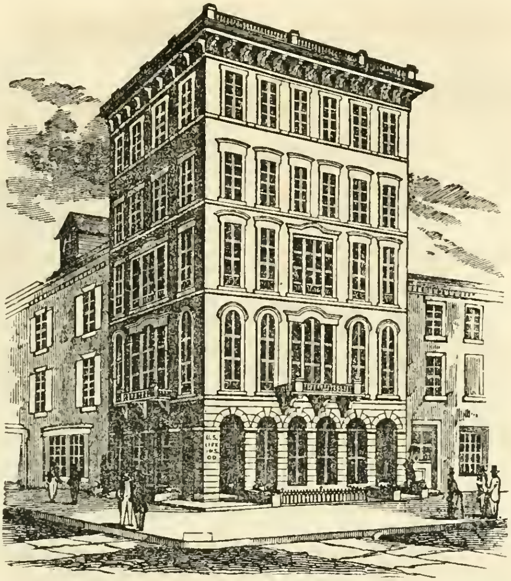

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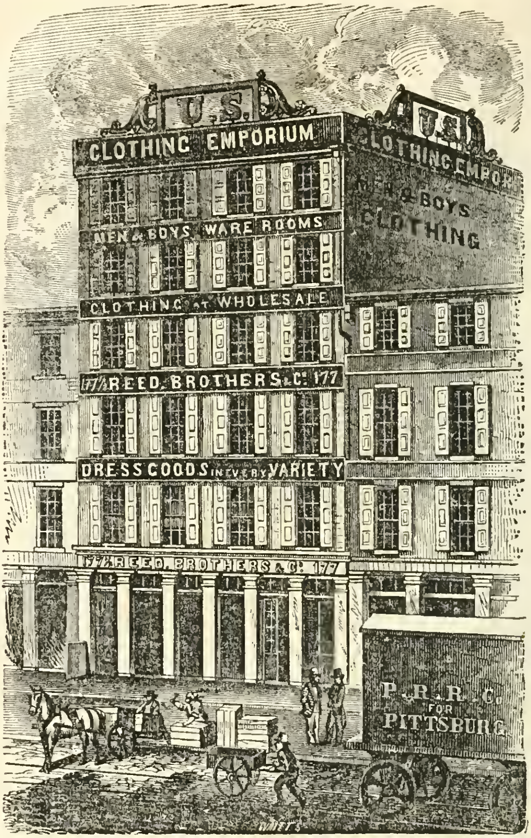

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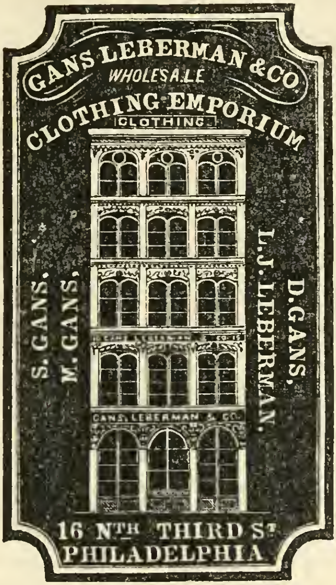

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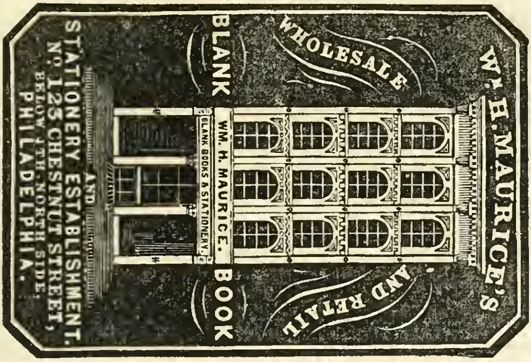

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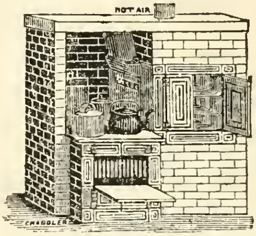

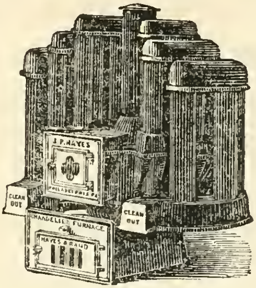

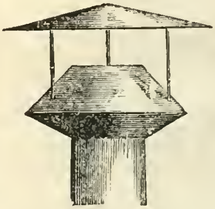

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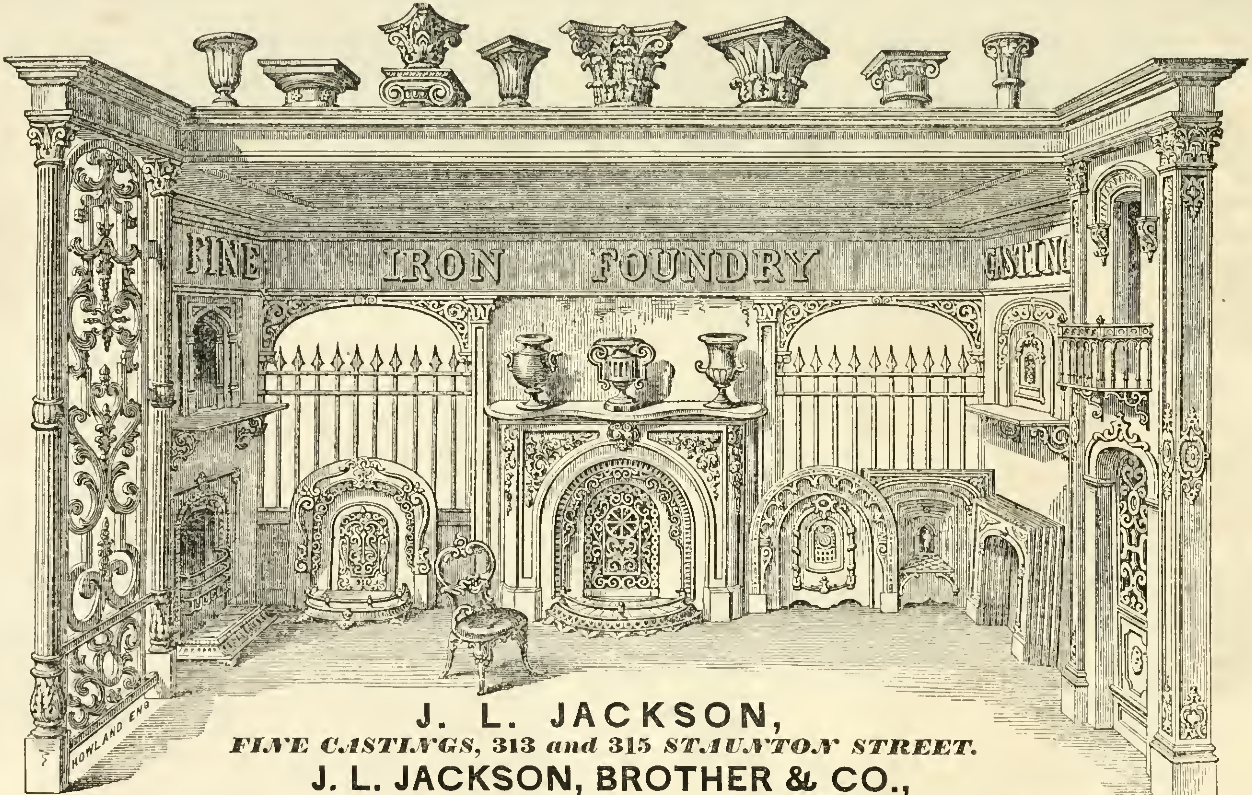

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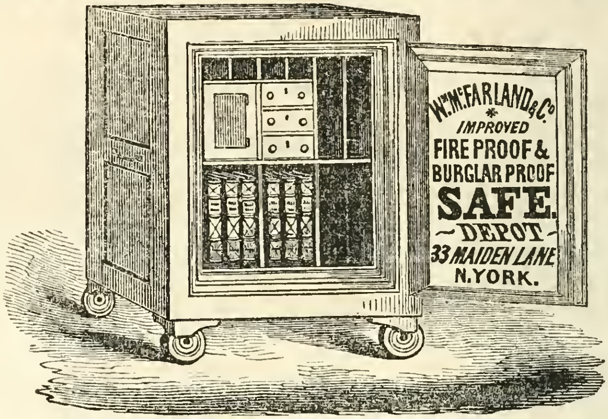

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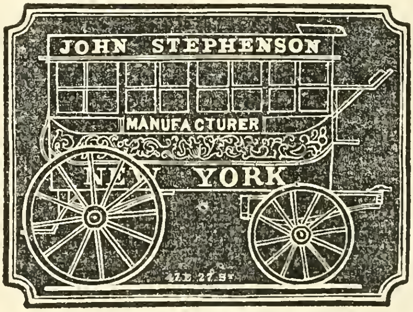

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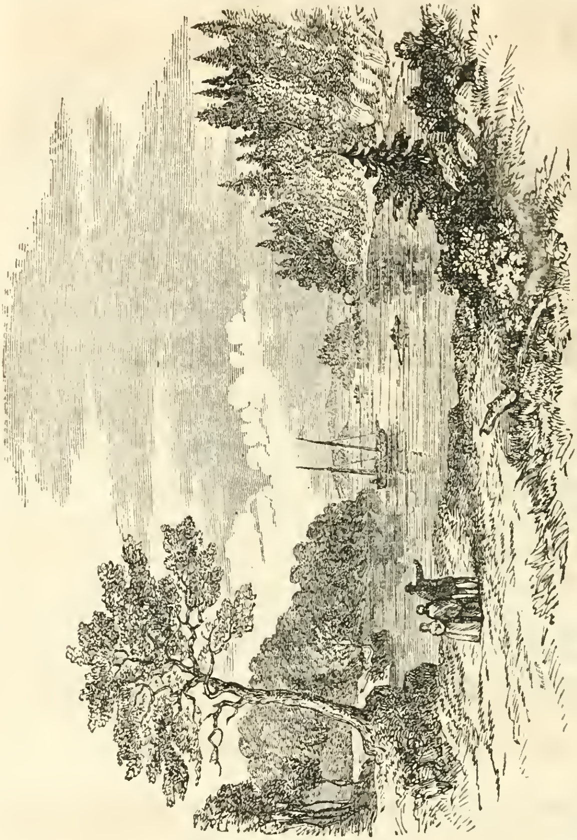

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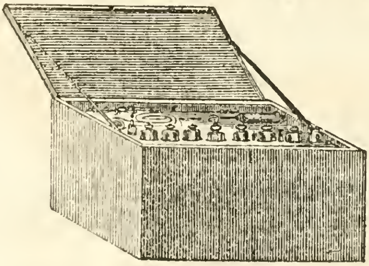

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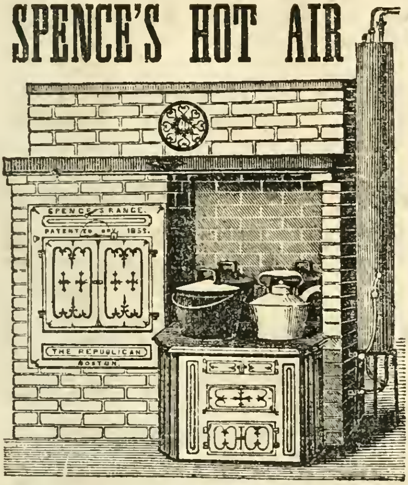
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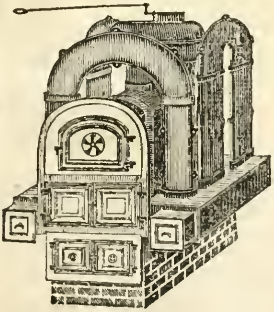

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The only Preparation that can be used on Varnished, Polished, or Enameled work of any kind, without injury. It contains none of those ingredients, such as Sweet Oil, Alcohol, or Turpentine, which, sooner or later, are so destructive to all varnished or polished work.

For Patent or Enameled Leather, Carriage Tops, Harnesses, &c., it is invaluable.

A SILVER MEDAL

From the Massachusetts Mechanics' Association, together with the following certificates, are a sufficient guaranty of its superiority.

We, the undersigned, having used Shirley's Universal Renovator for cleansing and restoring the Polish to our PIANO FORTES, FURNITURE, &c., do cheerfully recommend it as being SUPERIOR to all other preparations we have tried for a similar purpose.

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Farming and Garden
TOOLS,
TREES & PLANTS
ALSO,
Grain, Grass, Garden,
AND
FLOWERING SEEDS.

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MANUFACTURERS OF

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The undersigned beg particularly to invite the visits of strangers to their magnificent Stock, believing it to exceed in extent, variety, and richness, any other in this country. They feel sure the advantage of personally selecting GOODS at the different factories in Europe, and their own manufactories of Jewelry, Silverware, &c., here, enable them to offer inducements in prices and qualities, and prices considering qualities, such as cannot be offered by any other house in the trade.

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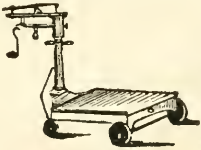
Has on hand and is finishing an assortment of FASHIONABLE CARRIAGES which he will sell upon reasonable terms.

REPAIRS DONE AT THE SHORTEST NOTICE AND AT LOW PRICES.



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The Subscribers beg leave to inform Mill Owners, and Mill-Wrights, and the Public, that they keep constantly on hand, and are prepared to make to order, French Burr Mill Stones, of all dimensions, warranted to be of the best quality, and on the most reasonable terms. Persons in want of such articles, are requested to give us a call before purchasing, as MR. McMAHON is the only practical Mill Stone Maker in the city.

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Wholesale Druggists,

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Which stand unequalled by any Medicine known for the cure of LIVER COMPLAINTS, and other diseases arising from a deranged state of the Liver. This Medicine has been in public use about fifteen years, and has acquired a reputation for curing the Liver Complaint which has never been equalled by any remedy heretofore offered to the public. As anti-bilious or Purgative Pills, they are unequalled, and are the original, only true, and genuine Liver Pills.

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Has no superior, or an equal, in this or any other country, for expelling worms from the human system. It is much used and highly recommended by physicians.

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Manufacturers of Vials, Bottles, Window Glass, and dealers in Flint Glass, keep constantly on hand a general assortment of the above articles. Also make to order a superior article of Mineral or Soda Water, Rhine Wine Bottles, &c., of colored glass.

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CRYSTAL, OR AMERICAN CROWN GLASS,

From 6 by 8, to 40 by 60, equal to the best French and English Glass.

MINERAL WATER AND PATENT MEDICINE BOTTLES MADE TO ORDER.

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SEAL, CARD, AND GENERAL ENGRAVING,

Self Sealing Advertising Envelopes, Telegraph Envelopes, Col'd. Embossed Cards, Steel Stamps; Post-office, Bankers' and Steamboat Stamps. with Inking Apparatus for the same; Book Titles, Door Plates, Wedding and Fancy Stationery.

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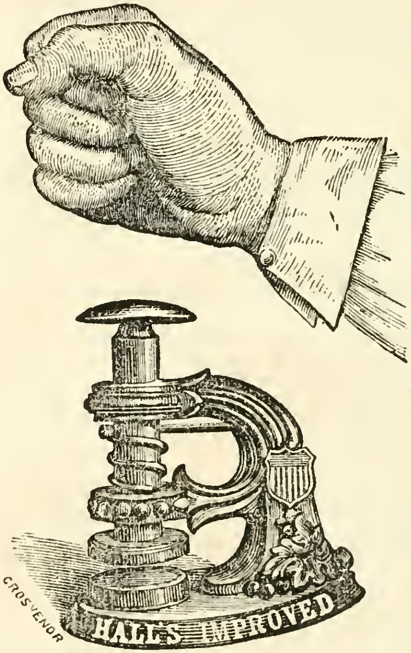
Of the most improved patterns and qualities, with Seals carefully Designed, Engraved, and adjusted. Hall's improved PERCUSSION PRESS, with **Seal complete for Five Dollars,** by C. F. Hall, Seal Engraver and Proprietor, 14 West Fourth street, Cincinnati, next door to "Highest Steeple."

"HALL'S PERCUSSION" is designed not only for a protection against forgeries of commercial instruments, such as Notes, Checks, Drafts, Bills of Exchange, &c., but as a ready means for authenticating, under seal, documents of States, Courts, Consulates, Corporations, Lodges, Notaries Public, Companies, and Societies. As a contrivance for economical and effective advertising of cards of business men in general, it is the most unique, useful, and perfect known.

☞ N. B.—The Genuine bear the stamp on apex of the Plunger, "C. F. Hall, Cin., O."

Weight of press only Two Pounds. During the last two years, Twelve Highest Premiums and Diplomas have been awarded to C. F. Hall, by several State, County, and Mechanics' Fairs, for above enumerated work.

A good recommendation of the superior quality of work, which characterizes my establishment, may be found in this fact, that, at the late Ohio State Fair, held at Dayton, a certain house in this city exhibited as their own, a large number of specimens of work executed in my own establishment.



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Rail Road Bonds, Certificates of Stock, Diplomas, Maps of all kinds, Views of Buildings, Show Cards, Portraits,

Executed in the best style of Lithography, with the latest improvements in Color Printing.

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Wrought Iron Rail Road Chairs and Bridge Bolts, made to order.

IRON WIRE for Bridges, Fences, and for Tinners' use; Rivets for Locomotives, Coopers', Turners'; also, Hose Washers.

Pump Chains (galvanized), Metallic Pump Tube (patent), with Reels and Fixtures.

Orders for articles in our line executed with promptness, and quality guaranteed in all cases.

Address,
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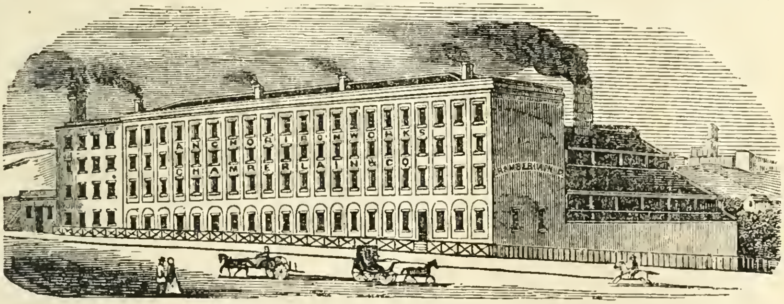

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Manufacturers of every description of
STOVE PATTERNS,
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Of the most modern style,
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Either in the Rough or Fitted, and
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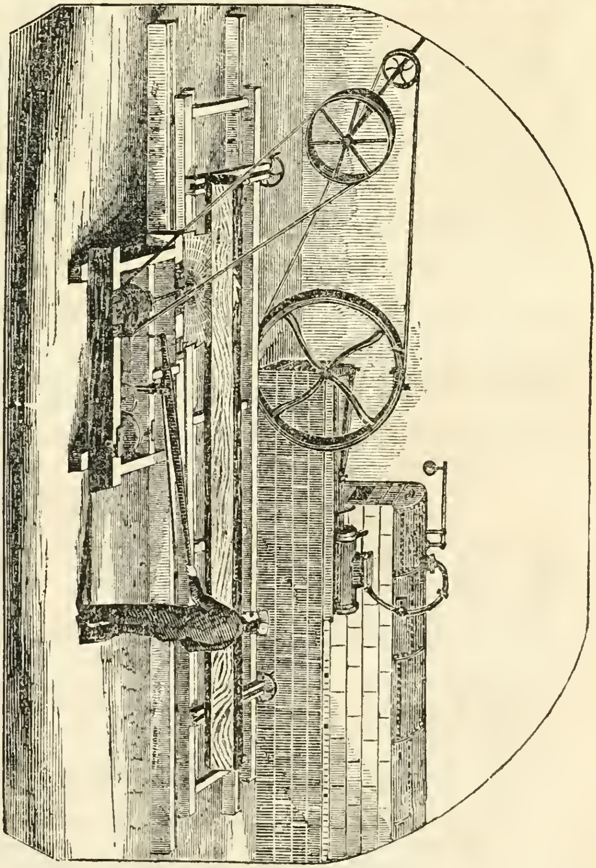

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CIRCULAR SAW MILLS, SAW MILL ENGINES, AND HORSE POWERS.

These Mills combine *simplicity, durability* and *cheapness*, and will cut double the lumber of any Mill in use. Also, manufacturers of every description of **Cast Steel Saws.** Originators and Introducers of the celebrated **Cast Steel Mill and Muley Saws,** bearing the mark, L L.

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PIANO FORTE

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All orders for tuning and repairing will be thankfully received and promptly attended to. Being known for more than fifteen years as the best tuner in the city, he flatters himself to satisfy all who may favor him with a call.

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ESTABLISHED, 1845,

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Garden, Grass, and other Seeds,

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IN THE

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TO

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HOVEY & CO. (Fruits, &c.), 7 Merchants' Row.

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DAVID LANDRETH, 23 South Sixth St.
C. B. ROGERS, 29 Market Street.
SAVERY & CO. (Ploughs, &c.), Manufactory S. Front St., below Navy Yard.

Baltimore.

R. SINCLAIR, Jr. & CO., 60 Light St.
E. WHITMAN & CO., 63 Exchange Place.

St. Louis.

WM. M. PLANT & CO., Main Street, between Market and Chestnut Streets.
G. BURNET, Jr., 6 City Buildings.

Books—Publishers.

Boston.

JOHN P. JEWETT & CO., 117 Washington Street.

New York.

IVISON & PHINNEY, 178 Fulton Street.
A. S. BARNES & CO., 51 John Street.
STRINGER & TOWNSEND, 222 Broadway.
D. BURGESS & CO., 60 John Street.
CHARLES SCRIBNER, Brick Church Chapel.
EDWARD H. FLETCHER, 117 Nassau St.

Philadelphia.

LIPPINCOTT, GRAMBO, & CO., 20 N. Fourth Street.
COWPERTHWAITE, DESILVER, & BUTLER, 253 Market Street.
E. C. & J. BIDDLE, 39 S. Fourth Street.
E. H. BUTLER & CO., 65 S. Fourth St.
JAMES B. SMITH & CO., 144 and 146 Chestnut Street.
WM. S. MARTIEN, 144 Chestnut Street.
HAYES & ZELL, 193 Market Street.
SOWER & BARNES, 84 N. Third Street.
PERRY & ERETY, S. W. cor. of Fourth and Race Streets.
MILLER & BURLOCK (also Bookbinders), George Street, above Eleventh St.
C. G. HENDERSON & CO., N. W. corner of Arch and Fifth Streets.

Wilmington.

J. T. HEALD (Bookseller and Bookbinder), 127 Market Street.

Baltimore.

CUSHINGS & BAILEY, 262 Market St., opposite Hanover Street.
JOHN CUSHING & CO., 6 North Howard Street.
WALKER & MEDAIRY (Wholesale and Retail Booksellers and Stationers), 310 Baltimore Street.
JOHN BERGER (Bookseller, Stationer, and Blank Book Manufacturer), 354 Baltimore Street.

Canada.

B. DAWSON, Montreal, Canada.

Boots and Shoes.

Boston.

T. & E. BATCHELLER & CO., 65 and 67 Pearl Street.

TOWNSEND, MALLARD, & COWING (Auctioneers, and Wholesale Dealers in Leather), 45 and 47 Pearl St.

Philadelphia.

CONRAD, THOMPSON, & CO., 104 Market Street.

WM. DULTY, 98 Market Street.

RORER, GRAEFF, & DARLING, 126 N. Third Street.

GODFREY & CO., 9 North Fourth Street.

J. W. McCURDY & SON (Wholesale Manufacturers of Ladies', Misses' and Children's), 111 Chestnut Street, second floor.

J. MILES & SON (Manufacturers of Ladies' and Gentlemen's), 37 South Fourth Street.

Carriage Trimmings.

WENNING & CO. (also Agents for the New Haven Wheel Co.), 360 Main St., Cincinnati.

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New York.

HANFORD & BROTHER, 29 Park Row.

JAMES WILDE, Jr., 27 Park Place.

ALFRED MUNROE & CO., 441 Broadway.

D. DEVLIN & CO., Broadway, corner of Warren Street.

Philadelphia.

BENNETT & CO., 182 Market Street.

GANS, LEBERMAN, & CO., 16 N. Third Street.

A. T. LANE & CO., 175 Market Street.

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J. M. MARIS & CO., 9 S. Third Street.

LINN, SMITH, & CO., 8 S. Third Street.

G. K. SMITH & CO., 149 N. Third St.

E. & C. YARNALL & CO., 39 Market St.

CHARLES ELLIS & CO., 56 Chestnut St.

HARRIS, HALE, & CO., 259 Market St.

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L. & B. CURTIS & CO. (Foreign Dry-Goods), 39 Broad Street.

HOYT, TILLINGHAST, & CO., 63 Broadway.

LAWRENCE, STONE, & CO., 41 Broadway, N. Y.; also, 4 Milk Street, Boston, and 82 Chestnut Street, Philadelphia.

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Philadelphia.

DAVID S. BROWN & CO., 38 and 40 S. Front Street.

JOHN FARNUM & CO., 26 S. Front St.

JOSEPH RIPKA (Manufacturer of Cottonades), Warehouse 32 S. Front St.

THOMAS & MARTIN, 61 Chestnut St.

C. H. WELLING, 18 Chestnut Street.

WOOD & ERRINGER, 37 Chestnut St.

Dry-Goods. Importers and Jobbers.

New York.

CLAFLIN, MELLEN, & CO., 111 Broadway.

GREENWAY, BROTHER, & CO., 24 Park Place and 19 Barclay Street.

RICHARDS & McHARG, 43 and 45 Barclay Street.

Philadelphia.

BARCROFT, BEAVER, & CO., 163 Market Street.

JAMES, KENT, SANTEE, & CO., 147 N. Third Street.

RAIGUEL & CO., 128 N. Third Street.

WOOD, BACON, & CO., 127 Market St.

J. S. MEDARA & CO. (Fancy Dry-Goods), 14 North Third Street.

SEXTON, SEAL, & SWEARINGEN (Fancy Dry-Goods), 165 Market St.

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WHITELEY, BROTHERS, & STONE (Importers and Jobbers), "Walker's Building," S. W. corner of Baltimore and Hanover Streets.

Engravers.

Boston.

WILLIAM JAY BAKER (On Wood), 21 School Street.

S. W. CHANDLER & BROTHER (also, Lithographers), 204 Washington St.

New York.

JOHN W. ORR (On Wood), 75 Nassau St.

HATCH & SEVERYN (also, Lithographers), 140 Fulton Street.

Philadelphia.

TOPPAN, CARPENTER, & CO. (Bank-Note), 76½ Walnut Street.

BALD, COUSLAND, & CO. (Bank-Note), 74 Walnut Street.

WM. H. VAN INGEN (On Wood), 2 North Sixth Street.

Cincinnati.

C. F. HALL (Seal Engraver), 14 West Fourth Street.

MIDDLETON, WALLACE, & CO. (also, Lithographers), 115 Walnut Street.

KLAUPRECH & MENZEL (also, Lithographers), Sixth Street, between Vine and Race, Medical College Building.

Engineer, Civil.

JAMES T. HOGANE (also, Architect and Surveyor), Davenport, Iowa.

Furniture.

New York.

WM. HEERDT (Extension Dining-Table Manufacturer), 150 Wooster Street, between Prince and Houston.

Philadelphia.

W. & J. ALLEN, 136 S. Second Street.

GEO. J. HENKELS, 173 Chestnut Street.

HALEY, WARE, & CO., 280 Chestnut St.

Cincinnati.

SMITH & HAWLEY, Wareroom 69 Fifth Street, South side, between Walnut and Vine; Manufactory, N. W. corner of Pearl and Elm.

H. C. HOWARD, Superintendent Cincinnati Furnishing Co., 51 and 53 Vine Street.

Hardware.

Philadelphia.

MARTIN BUEHLER, BROTHER, & CO., 195 Market Street.

PHILIP S. JUSTICE & CO., 21 N. Fifth Street.

NEWLIN, MARSHALL, & Co., 151 Market Street.

WM. M. McCLURE & BROTHER (Building Hardware and Tools), 281 Market Street.

Baltimore.

TURNER & JONES, 96 W. Lombard St.

Cincinnati.

YOUNG, NOURSE, & POND (Foreign and Domestic Hardware), 15 Pearl St.

HUNTER, COLBOURN, EDMESTON, & BARR (Saddlery Hardware), Walnut Street, between Third and Fourth.

LATIMER, COLBURN, & LUPTON, 74 Main Street, near Pearl.

Iron and Steel.

Philadelphia.

MORRIS AND JONES & CO., Market and Sixteenth Streets.

NATHAN TROTTER & CO. (Metals), 36 North Front Street.

J. & G. P. WHITAKER & CO., 147 North Water Street.

Cincinnati.

H. N. WENNING (also, Heavy Hardware, Stoves, and Hollow-Ware), 360 Main Street.

Leather. Findings.

Boston.

SAFFORD & BROOKS (Leather and Findings, and the various Machines used by the Trade), 1 Blackstone St.

Philadelphia.

ASHMEAD & HART (Shoe Manufacturers' Tools and Materials), 32 N. Fourth Street.

LAING, MAGINNIS, & BROWN (Do.), 24 N. Third Street.

J. K. GAMBLE & BROTHER (Morocco and Fancy Leather Manufacturers), 5 Margaretta Street.

Cincinnati.

A. M. TAYLOR & CO. (Hides, Oil, and Leather), 20 and 22 Columbia Street, West of Main.

Lightning-Rods.

A. M. QUIMBY & SON, 119 Nassau St., New York.

Locomotive Builders.

M. W. BALDWIN & CO., corner of Broad and Hamilton Streets, Philadelphia.

NILES & CO., East Congress Street; also, Founders and Machinists, East Front Street, Cincinnati, Ohio.

Paper.

E. O. GOODMAN & CO. (Printing Inks, and Paper Manufacturers' Materials), 34 Pearl Street, N. side, near Walnut Street, Cincinnati, Ohio.

Scales.

RICHARD MURDOCK, 46 South Charles Street, Baltimore.

Surgical Instruments, &c.

Philadelphia.

HORN & ELLIS (Manufacturers of Trusses, Supporters, &c.; also, Manufacturers of Shoemakers' Tools and Materials), 111 Race Street.

HORATIO G. KERN, 393 Market Street.

J. H. GEMRIG, 43 S. Eighth Street.

WIEGAND & SNOWDEN, 15 N. Fifth St.

Trunks, Valises, &c.

G. W. SCHOLL & BROTHER (Manufacturers), W. Row and Plum Sts., between Everett and Mason, and 57 N. W. corner of Walnut and Columbia Streets.

Tin-Ware.

GEO. D. WINCHELL (Japanned, Ornamental, and Bronzed; also, Tinmen's Machines and Tools), N. W. corner of Race and Columbia Streets.

Umbrellas, Parasols, &c.

ISAAC SMITH'S SONS & CO., 257 Pearl Street, near Fulton, New York.

SLEEPER & FENNER, 126 Market St., Philadelphia.

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